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A QUALITATIVE STUDY OF INDUSTRY AND AIR FORCE COMMODITY

COUNCIL PROCESSES

THESIS

Robert J. Irvine, First Lieutenant, USAF

AFIT/GCA/ENV/05M-03

**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

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AFIT/GCA/ENV/05M-03

A QUALITATIVE STUDY OF INDUSTRY AND AIR FORCE COMMODITY
COUNCIL PROCESSES

THESIS

Presented to the Faculty

Department of Systems and Engineering Management

Graduate School of Engineering and Management

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In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Cost Analysis

Robert J. Irvine, BS

First Lieutenant, USAF

March 2005

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A QUALITATIVE STUDY OF INDUSTRY AND AIR FORCE COMMODITY
COUNCIL PROCESSES

Robert J. Irvine, BS
First Lieutenant, USAF

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Abstract

The purpose of this research was to compare industry and Air Force commodity council processes. More specifically, this research used a survey to gather strategic sourcing philosophies and procedures (with respect to small business participation in procurement strategies) from successful industry firms. Industry source selection documentation, applicable government contracting guidelines, and a literature review of strategic sourcing materials were also reviewed. The current Air Force commodity council process and associated historical documents were then studied using a business process modeling tool. It was determined that the Air Force process differs from industry in how small business participation is addressed, the level of detail provided in their source selection guidance, and the manner in which industry business practices are utilized. A modified Air Force commodity council process model and associated commodity council implementation and operations guide (IG5307.104-93) was proposed.

AFIT/GCA/ENV/05M-03

To my wife – You are the best.

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Robert J. Irvine

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A QUALITATIVE STUDY OF INDUSTRY AND AIR FORCE COMMODITY COUNCIL PROCESSES

I. Introduction

BACKGROUND

According to the Office of the Secretary of Defense, the 2004 Department of Defense budget was roughly \$380 billion—\$306 billion of which was spent on procurement (OSD, 2004). To better manage this sizable acquisition budget used to purchase goods and services, as well as maximize the associated purchasing power inherent in such a sizeable sum, the federal government has adapted and implemented industry best-practices (e.g. commodity councils) and is beginning to benefit from the changes (Gottlieb, 2004).

Concurrently, the United States federal government has strived to achieve the additional objective of socio-economic development by ensuring as much small business participation as possible in strategic sourcing and acquisition strategies. Strategic sourcing processes that consider small business involvement have been examined from both industry and federal points of view to provide recommendations for developing an improved commodity council process. This added responsibility, while not exclusive to the federal government, was examined in this study to identify steps taken to include what Thai defines as “non-procurement goals” in short and long-term procurement strategies. That is, adhering to and achieving related goals as set by commodity councils, federal regulations, and congressional mandates. The next step is to improve upon the employed processes to ensure that all goals, to include small business, are met.

Commodity Councils (CC)

As the Air Force and the Department of Defense have employed procurement transformation strategies to leverage enterprise-level spending, implement efficient acquisition processes, and enhance supplier relationships, they have looked toward industry experience in developing commodity councils to achieve their goals. From an Air Force perspective, a commodity council is “a cross-functional sourcing group charged with formulating a centralized purchasing strategy and establishing contracts for enterprise-wide requirements for a selected commodity grouping” (Department of the Air Force, Air Force Contracting, 2004). Each commodity grouping is an established category of goods or services (e.g., IT equipment, medical supplies, force protection equipment, etc.), which can range in value and serviceable life. Within each commodity grouping exists many spirals or subsets (e.g., a laptop spiral would be a subset of the IT commodity council). Specific, tailored strategies and objectives are established for each spiral to best achieve the designated goals for that acquisition spiral (Department of the Air Force, AFFARS, 2004). Figure 1.1 is a visual representation of the commodity council construct, to include individual spirals and their associated objectives.

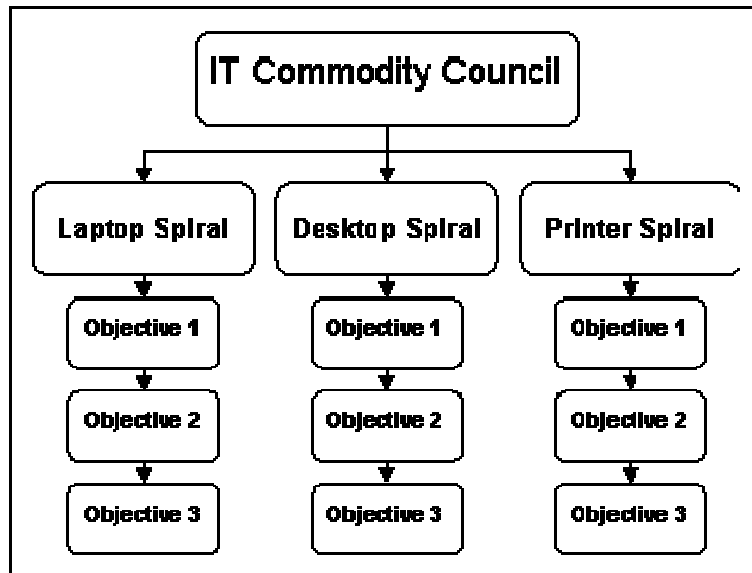


Figure 1.1 – General Commodity Council Construct

The benefits of using committees such as commodity councils have been realized in industry practice for some time (Porter, 2002b). As a matter of fact, the advantages of leveraged purchases have made this cost-reduction strategy number one among industry buyers according to *Purchasing Magazine* (Porter, 2002b), which performed a reader poll involving company cost-reduction strategies. Further, an additional study completed by CAPS Research, a nonprofit research organization dedicated to purchasing and supply chain issues, showed that in 1997 roughly 20% of Fortune 500 firms had used some type of cost-reducing committee to manage company spending (CAPS Research, 2004). In the Government's case, adapting industry practice to meet the Department of Defense's unique requirements appears promising. Thus far, the use of commodity councils has netted an increase in Air Force overall buying power by 22% (Hurley, 2003).

Commodity councils usually operate at the upper-management level, and draw upon the diverse expertise of their members to achieve strategic sourcing that leverages purchasing volume while satisfying organizational goals (a commodity council and the

practice of strategic sourcing are closely related in that they are both used to maximize procurement savings/cost avoidance). Achieving those goals set forth by the council requires strategies for gathering market intelligence, developing sourcing methodologies, selecting preferred suppliers, and ultimately granting enterprise-wide contracts based on these strategies. Once the council has developed a procurement plan, decentralized purchasing units execute the purchases in line with the pre-established business agreements (Department of the Air Force, AFFARS, 2004).

Small Business

In early 2005, the Under Secretary of the Air Force, Peter B. Teets stated:

“Whether we're guarding our skies here at home or participating in America's global war on terrorism, accomplishing the Air Force mission requires much more than aircraft and satellites, or even the tireless efforts of the Air Force men and women who serve both here and abroad. Supporting the air force as full partners in the defense of our country are small businesses. The same innovation that creates new technologies, products, and services that enable the Air Force's dominance of air and space also contributes to improving our quality of life. America's small businesses employ more than half of the private workforce and create more than 66-percent of the new jobs nationwide. Small businesses are key to America's prosperity, the well being of our communities, and strength of our Air Force. The use of small businesses in Air Force contracting sustains a critical national resource, and I urge commanders at every level to actively seek the use of small businesses whenever and wherever possible.”

Mr. Teets' comments are supported by the Small Business Reauthorization Act (SBRA) of 1997. The Act is designed to ensure that the small businesses of the U.S. receive adequate consideration in government contracting by establishing statutory objectives for federal agencies to follow. The Act states that (United States Congress, 1997):

- The goal for participation by small business concerns shall be established at not less than 23 percent of the total value of all prime contract awards for each fiscal year

- The goal for participation by small business concerns owned and controlled by service-disabled veterans shall be established at not less than 3 percent of the total value of all prime contract and subcontract awards for each fiscal year
- The goal for participation by qualified HUBZone small business concerns shall be established at not less than 1 percent of the total value of all prime contract awards for fiscal year 1999, not less than 1.5 percent of the total value of all prime contract awards for fiscal year 2000, not less than 2 percent of the total value of all prime contract awards for fiscal year 2001, not less than 2.5 percent of the total value of all prime contract awards for fiscal year 2002, and not less than 3 percent of the total value of all prime contract awards for fiscal year 2003 and each fiscal year thereafter
- The goal for participation by small business concerns owned and controlled by socially and economically disadvantaged individuals shall be established at not less than 5 percent of the total value of all prime contract and subcontract awards for each fiscal year
- The goal for participation by small business concerns owned and controlled by women shall be established at not less than 5 percent of the total value of all prime contract and subcontract awards for each fiscal year.

The statutes listed above focus on overall federal procurement goals, but do not address additional governmental/public policy goals. Thai (2001) asserts that sound public procurement systems possess two groups of goals: procurement and non-procurement. According to Thai, procurement goals consist of cutting processing/delivery times, lowering costs, managing suppliers, etc. Non-procurement goals take into consideration social, economic, environmental, and international-relation goals. Due to the steady thrust by the Department of Defense to reduce costs, non-procurement goals are often viewed as secondary, and therefore, receive less emphasis. The unintended consequences that result include a reduced focus on small business suppliers, who fall into the socio-economic categories of non-procurement goals.

The current Air Force commodity council process attempts to incorporate small business in its buying/acquisition strategy. This study will examine the current process and determine what improvements (if any) can enhance the process. Ultimately, a better-defined process for determining the appropriate mix of suppliers is required to ensure that all qualified suppliers receive proper consideration throughout the DOD's procurement process.

Supplier Rationalization

A primary activity of a commodity council (and strategic sourcing in general) is supplier rationalization. Ausink et al. (2004) describes rationalizing as “determining the right number of suppliers for the company... [which] decreases or increases how many suppliers provide a given good or service.” Duffy (2005) writes that “the idea is that an appropriate (often fewer) number of suppliers means that the supply management organization will reap lower prices through leveraged volume, standardized service, and lower costs to manage transactions and the supply base”. Further, “it will be easier to monitor supplier performance, and because these suppliers have been identified as ‘key’ or ‘the best fit’ for the required goods and services, the relationships can grow, fostering integration, trust, value-added services, and innovation.”

The current Air Force commodity council process is an excellent tool for performing supplier rationalization because, as committee members step through the method, those suppliers who do not meet the necessary criteria are automatically eliminated. Unfortunately, the Air Force commodity council process may not sufficiently incorporate non-procurement goals into current supplier criteria which may inadvertently result in the

elimination of an entire classification of potential suppliers. As Duffy (2005) writes “supply base rationalizations can often appear to contradict the firm’s broader goals related to minority-owned, women-owned, local, and small-business suppliers.” Therefore, “firms must find a way to incorporate these ideals into the supply base rationalization strategy.”

Supplier rationalization is necessary to achieve successful supplier management. The Hackett Group (2004) reports that world-class companies (companies in the top 10% of their industry) use 77% fewer suppliers than average firms to satisfy the majority of their procurement and non-procurement goals, as well as their supplier needs. The authors assert that the above-average companies analyze and monitor their rationalization process to the point where it can be considered “an art form.” It is this level of attention that the Air Force can benefit from throughout the commodity council process in striving to achieve its guiding principle to align Air Force strategy with small business capability/non-procurement goals and procurement goals (U.S. Air Force, HQ Standard Systems Group, 2003).

PROBLEM

The Office of the President and Congress have worked together to pass “legislation over the past fifty years to help protect and develop small business” (Pike, 2004). This commitment is motivated by the important roles that small businesses play in the U.S. economy. They invent new technologies, contribute to over half of the U.S. Gross Domestic Product (GDP), and are responsible for much of the U.S.'s business turnover (which helps to make business markets more competitive and productive) (SBA, 2004).

By including small business in government procurement strategies, federal agencies fulfill their non-procurement goals and help support the development of the U.S. economy.

Concurrently, Federal Acquisition Regulations (FAR) have been enacted to streamline the Federal Acquisition System to “(1) satisfy the customer in terms of cost, quality, and timeliness of the delivered product or service; (2) minimize administrative operating costs; (3) conduct business with integrity, fairness, and openness; and (4) fulfill public policy objectives” (FAR, 2004). This and other regulations calling for the most effective and efficient use of taxpayer dollars have prompted the Federal Government and in particular the United States Air Force to follow industry leads in developing strategic sourcing initiatives or what is termed commodity councils.

Research has shown that some of the activities inherent in a commodity council process negatively effect small business by reducing the number of available government contracts and reducing the government's supplier base (OMB, 2002). No research, however, has been performed to determine if commodity council members prioritize non-procurement goals (socio-economic/small business goals), when rationalizing the supplier base within a commodity area.

Accordingly, this research seeks to determine the process by which industry conducts supply base rationalization and what role small business plays in that rationalization. Subsequently, this research will explore the current Air Force commodity council process and the extent to that it incorporates small business. Improvements for the process will be developed if necessary.

SCOPE

This research focuses on the Air Force's commodity council process with respect to small business participation. Further, this research focuses on the socio-economic elements of federal and industry non-procurement goals. It examines the current Air Force commodity council process and, in particular, how small business considerations are incorporated into procurement strategies. To examine the existing supplier selection process, strategic purchasing and supply chain management best-practices from industry firms and the federal government are reviewed, as well as information obtained through interviews with industry experts.

RESEARCH QUESTIONS

1. What commodity council processes does industry incorporate to address small business utilization in contracting?
 - a. What lessons can be learned from industry?
2. What commodity council processes does the federal government (and in particular the Air Force) incorporate to address small business considerations in government contracting?
 - a. Can the federal government enhance their current commodity council process with respect to addressing small business participation in contracting, using lessons learned through industry commodity council processes and relevant literature and regulations?

INVESTIGATIVE QUESTIONS

1. What is a commodity council?
2. Who is involved in commodity councils for industry and the Air Force?

3. What are the differences, if any, in the supplier selection process of industry and Air Force commodity councils?
 - a. How does an industry commodity council select suppliers?
 - b. How does an Air Force commodity council select suppliers?
 - c. What are the similarities and differences between the two?
4. What are the requirements of the Air Force with respect to small business participation within the acquisition arena?
5. How might a commodity council be utilized for the Air Force's benefit?
 - a. What are the benefits of commodity councils in industry?
 - b. Can those benefits be applied to, or achieved in, the Air Force?
6. What are the benefits to using small business, both generally and in commodity councils?
7. What small business elements in the literature and industry commodity councils should be included in an Air Force commodity council?
8. Should commodity councils improve their small business consideration process?
9. How is small business considered by commodity councils today?

THESIS OVERVIEW

Chapter I provided pertinent background information and an introduction to the research and associated investigative questions. Chapter II presents a literature review that summarizes strategic purchasing methodologies, cost-reduction strategies used by industry leaders and the Department of Defense, and benefits/legislation about small business that are significant to this research. Chapter III presents the research methodology used in this study. Chapter IV provides a detailed analysis of the collected data and the resulting findings. Finally, Chapter V provides conclusions, limitations, and recommendations for future research.

II. Literature Review

CHAPTER INTRODUCTION

The purpose of this chapter is to provide necessary information required to understand the government's current process with respect to commodity councils, as well as to provide a review of the literature. The first section will illustrate the current state of Department of Defense (DOD) procurement. Further, it will present reasons for needed improvement within the federal procurement system, and the desired state of the process. The next section discusses strategic purchasing methods utilized by industry procurement officers. Effective industry best-practices will be highlighted. The following section discusses commodity councils in-depth, to include the manner in which they are utilized by the DOD. Finally, the last section will provide essential information, to include benefits and drawbacks, on small business.

GOVERNMENT PROCUREMENT

In this section, the history and current state of government procurement, support for needed improvement, as well as the desired state of government procurement is presented. A summary of the major points is provided at the end of this section.

History and Current State of Government Procurement

Public procurement (at the municipal level) was underway well before the establishment of state and federal agencies (Thai, 2001). Dobler (1984) writes that "the first law dealing with government procurement in the United States was passed by

Congress in 1792.” Over time, the process has evolved from a few commissioners acquiring goods for the local militia, to the highly complex system of contracting officials, acquisition experts, and congressional oversight committees that exists today.

According to Thai (2001), the government participates in four primary areas of economic activity. It

1. Provides a legal framework for all economic activity
2. Redistributes income through taxation and spending
3. Provides necessary goods and services to the public (e.g., national defense, public safety, education, etc)
4. Purchases goods, services, and capital assets

Figure 2.1 is a visual depiction of the public procurement process. This process consists of five basic essential components: policy making and management (Box 1), procurement regulations (Box 2), procurement authorization and appropriations (Box 3), public procurement function in operations (Box 4), and feedback (Box 5).

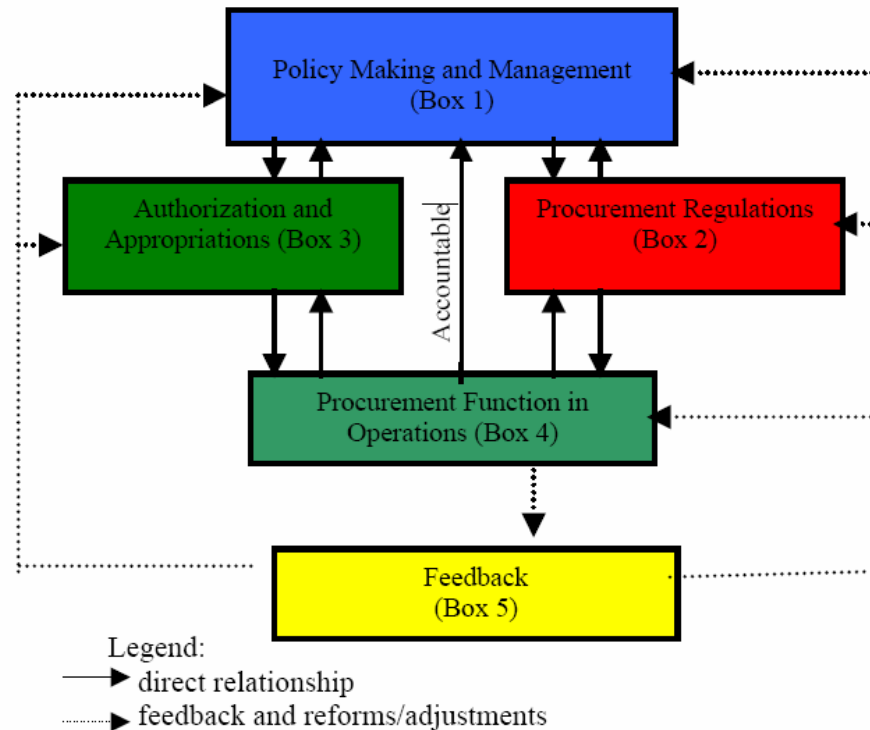


Figure 2.1 – Public Procurement System (Thai, 2001)

The procurement method, technique, or process that is used depends primarily on the goods or services being obtained (National Institute of Governmental Purchasing, Inc, 1999; Federal Acquisition Institute, 1999). For example, bringing a new weapon system into the inventory will be far more difficult and tedious than securing custodial services for a government-used building.

The complexity of the government’s procurement process is necessary when evaluated against the role that the government plays. Unlike industry, government purchasers must follow a specific set of rules that prohibit decision makers from using taxpayer dollars on goods and services that do not aid in mission accomplishment. Furthermore, Dobler (1984) points out that specific laws and regulations steer government procurement procedures by requiring “competitive bidding, fixed budgetary

limitations, rigid auditing of accounts, and the use of prescribed standard specifications.”

The author argues that while these policies are meant to “protect the interests of the taxpayers, they generally result in less flexibility and, in some cases, purchases whose total cost...is greater than it would have been had the government used profit-oriented business buying techniques.” The enacted laws and regulations not only demand the proper management of each dollar spent, but they also attempt to limit/eliminate the fraud, waste, and abuse of taxpayer funds (Nagle, 1987; Penska, 2000; and Thai, 2001).

Thai (2001) provides an extensive list of the statutes that frame today’s public procurement construct, including:

- The Office of Federal Procurement Policy Act (1974) – Created the Office of Federal Procurement Policy within the Office of Management and Budget to provide central policy direction for procurement
- The Competition in Contract Act (1984) – Promoted greater levels of competition for government contracts
- The Federal Acquisition and Streamlining Act (1994) – Required development of results-oriented acquisition guidelines
- The Clinger-Cohen Act (1996) – Authorized contracting officers to limit the number of proposals in the competitive range, in accordance with the criteria specified in the solicitation, to the greatest number that will permit an efficient competition among the offerors rated most highly in accordance with such criteria
- The Acquisition Results Act (1998) – Required managing for results and the improvement of federal acquisition workforce capabilities to achieve desired results

The driving philosophies behind public procurement have experienced many changes over the years. Thai (2001) writes that in the beginning of U.S. federal procurement, each government agency performed its own decentralized purchasing activities. As time has passed, purchasing functions have shifted to a centralized design with state and local

governments managing public procurement (Thai, 2001). Recently, however, acquisition reformists have supported a decentralized design for improved end-user support (Thai, 2001). This view is supported by the Department of the Air Force, Air Force Contracting (Department of the Air Force, Air Force Contracting, 2004).

Support for Needed Improvement

The government has a taxpayer responsibility to provide proper oversight of public funds, and a sincere focus on governmental process improvement (Thai, 2001). Gottlieb (2004) points out that in modern times, the Department of Defense and the military have had to adapt to nearly four decades of calls for acquisition and procurement reform by Congress, the media, and the White House. Factors such as long-term deployment of U.S. troops, the continued conversion of military desk-jobs into civilian positions, the aging federal workforce, and White House pressure for increased outsourcing, have escalated the importance of maximizing the DOD budget in all areas (Gottlieb, 2004). Due to these factors, federal procurement officials have given more effort to “leverage down inventory, logistics, number of transactions and other process costs, while at the same time boosting availability of goods and services to support the war fighter” (Gottlieb, 2004). For instance, O’Brien (2004) writes that one analysis revealed the Air Logistics Center acquired jet engine bearings through 242 different distributors, 339 contracts, 1037 contract actions, all with an annual cost of \$25.6 Million. According to O’Brien (2004), there are only five different bearing manufacturers that have the capability of meeting the Air Force’s needs, but due to the inefficient manner in which

the procurement actions were handled, decision makers did not realize the error in their ways.

Prompted by this and other examples of inefficiencies, experts have begun to explore ways to improve efficiency. Thai (2001) examines the history of public procurement and points out areas where constructive changes have occurred, as well as remaining regions in need of improvement. Christensen et al. (1999) provides a comprehensive list of regulations and initiatives that the U.S. Government has taken with the intention of improving procurement procedures. The list can be found in Appendix B.

Desired State of Government Procurement

The government has been working to improve its procurement environment through the combined efforts of virtually everyone involved in the chain of command. The organizations included in the improvement process extend from the largest organizations with vast mission responsibilities, down to individual units. To emphasize this point, consider that an internet search performed in January 2005 of the words “federal acquisition reform” resulted in over 7,000 hits from various organizations across the federal government.

Although the groups may differ in their approach, the desired end-result remains basically the same. The main tenets of this preferred state are offered by the Defense Acquisition Guidebook which asserts that the following components must be incorporated into the acquisition process for success to be attained. These components, quoted from DAU (2004), are:

Flexibility. Program managers shall tailor program strategies and oversight, including documentation of program information, acquisition phases, the timing and scope of decision reviews, and decision levels, to fit the particular conditions of that program, consistent with applicable laws and regulations and the time-sensitivity of the capability need.

Responsiveness. Advanced technology shall be integrated into producible systems and deployed in the shortest time practicable. Approved, time-phased capability needs matched with available technology and resources enable evolutionary acquisition strategies. Evolutionary acquisition strategies are the preferred approach to satisfying operational needs. Spiral development is the preferred process for executing such strategies.

Innovation. Throughout the Department of Defense, acquisition professionals shall continuously develop and implement initiatives to streamline and improve the Defense Acquisition System. Program managers shall examine and, as appropriate, adopt innovative practices (including best commercial practices and electronic business solutions) that reduce cycle time and cost, and encourage teamwork.

Discipline. Program managers shall manage programs consistent with statute and the regulatory requirements. Every program manager shall establish program goals for the minimum number of cost, schedule, and performance parameters that describe the program over its life cycle. Approved program baseline parameters shall serve as control objectives. Program managers shall identify deviations from approved acquisition program baseline parameters and exit criteria.

Streamlined and Effective Management. Responsibility for the acquisition of systems shall be decentralized to the maximum extent practicable. The [persons responsible] shall provide a single individual with sufficient authority to accomplish approved program objectives for development, production, and sustainment. The [persons responsible] shall ensure accountability and maximize credibility in cost, schedule, and performance reporting.

One example of how major organizations are striving towards an improved state of government procurement can be found with the Defense Logistics Agency (DLA), the largest combat support agency for the Department of Defense. Their mission is to provide logistics support to the DOD around the world. The DLA has developed four goals that effectively describe the general aim of their organizational objectives. Within each goal is a set of strategies designed to achieve the desired results. The goals and brief descriptions of the applicable strategies and objectives, quoted from the 2004 DLA Strategic Plan (DLA, 2003), are:

1. Provide responsive, best value supplies and services consistently to [their] customers – This goal is all about the customer. The intent is to bolster customer satisfaction through quick response times and effective long and short-term planning.
2. Structure internal processes to deliver customer outcomes effectively and efficiently – This process goal is aimed at using supply chain management best-practices to reduce costs, eliminate inventory accounting error, and increase supplier efficiency.
3. Ensure [their] workforce is enabled and empowered to deliver and sustain logistics excellence – This goal focuses on developing the employees of the DLA so they are able to meet all expectations and continue to improve the organization.

4. Manage DLA resources for best customer value – This goal addresses the financial needs of the DLA. The intent is to not only increase the fiscal efficiency of the organization, but public procurement as a whole.

The organizational goals that flow from the overarching tenets above require further specification by each entity of the organization based on that entity's mission and capabilities. To illustrate this point, consider the case of Logistics Contracting at Wright-Patterson AFB, OH. In a May 2004 interview, Scott Correll, Chief of Logistics Contracting at Air Force Materiel Command (AFMC) Headquarters, Wright-Patterson AFB, told *Purchasing Magazine* that Air Force procurement is focused on improving the availability of supplies by 20% with zero cost growth through 2009. In order to accomplish the task, AFMC is developing strategic agreements with their "critical suppliers," increasing competition by bringing in new providers, and shifting focus to performance-based metrics for evaluation of supply-chain partners. An added incentive to making the changes will be the closer relationship that Air Force organizations will have with their specialized suppliers. This closeness will lower costs in the long run because the work previously necessary to accomplish commodity purchases will be severely reduced by the amalgamation of the parties involved (Purchasing Magazine, 2004). Moore et al. (2002) supports Correll's view by stating that the early "arms-length, adversarial relationships with low-cost vendors" that the government traditionally pursued, have been replaced by closer affiliations that result in improved products and service.

Table 2.1 summarizes the Air Force's procurement process environment (as of 2004) and the desired procurement process environment. Although some changes have already been instituted, such as MAJCOM and Air Staff membership in decisions, the future end-

state will contain all characteristics necessary to be an effective and efficient function of the federal government.

**Table 2.1 – Air Force Procurement Process Environment – Adapted From AQC
(Department of the Air Force, Air Force Contracting, 2004)**

	Current Acquisition Environment	Desired Acquisition Environment
Stakeholder Participation	Little involvement in strategy development	MAJCOM & Air Staff membership in decisions
Strategy & Execution	Decentralized Strategy - Each Base/MAJCOM does their own	Centralized AF Strategy
Compliance	No requirement to use strategy or contracts	SAF/AQ policy direction to use vehicles and comply with standards
Order Execution	Decentralized Ordering	SAME
Data/Info Usage	Little Air Force Spend Analysis	Spend, Market, and Inventory Analysis
Strategy Approval	Local Functional Manager	Shared Authority Among Upper Management
Contract Approval with Execution	Unclear & varied	Streamlined and consistent strategy approval process

Summary – Government Procurement

U.S. Government procurement has been a necessary function for over 200 years. The current construct is a complex mix of large federal agencies and many purchasing officers who are guided and restricted by laws and regulations enacted by Congress. In an effort to maximize the spending power of a budget that is undergoing constant flux and to stretch every dollar to the greatest extent possible, government administrators have looked to acquisition reform for answers. For nearly four decades, senior leadership has been dedicated to improving the procedures used to manage and spend the taxpayer funds

bestowed to them. The process improvements that have been implemented have resulted in much progress; however, additional change is required. The desired state of government procurement includes strategy development and execution with participation from all stakeholders, a centralized plan for each major section of government that is based on up-to-date and reliable information from the field, and a consistent, streamlined approval process that is open to improvements (Department of the Air Force, Air Force Contracting, 2004).

INDUSTRY PROCUREMENT BEST-PRACTICES

The desire to transform the current acquisition process has lead Air Force leadership to explore those industry best-practices that might aide in the development process. This section presents examples of successful procurement practices that industry-leading firms have employed to improve their performance. Moreover, the methods described in this section either are being considered for implementation, or have already been implemented in some way into Air Force procurement. The first part of this section presents a brief overview of best-practices. The following parts explore the concepts of benchmarking, purchasing and supply management, spend analysis, the consolidation of contracts, and the Supply-Chain Operations Reference (SCOR) model. A summary of the major points is provided at the end of this section.

For the purpose of this research, a best-practice is defined as “a documented strategy or tactic employed by highly successful organizations that results in significant measurable and documented improvements in cost, schedule, quality, performance,

safety, environment, or other measurable factor that impacts the health of the organization” (Acquisition Community Connection, 2004).

As previously stated, the Department of Defense must follow a different, and usually more stringent, set of rules and regulations when using taxpayer funds to purchase goods and services. Graham (2003) points out that one of the goals of an industry firm is to maximize profit—this is not the case for the federal government and the laws which guide public procurement reflect that point. Why then is it reasonable for government officials to look towards industry for beneficial methods of doing business? Moore et al. (2002) propose two reasons:

1. Although the companies or organizations that developed the processes differ in nature, the DOD may still be able to draw some benefit from adapting the ideas to fit the government’s need.
2. The DOD does business daily with industry firms, and therefore, should understand what the suppliers expect from the buyer. By doing so, the government has the opportunity to fully comprehend the changing landscape of procurement, and align themselves to take advantage of their position.

Additionally, the commercial segment of the U.S. economy is 20 times the size of the national defense sector (U.S. Bureau of Economic Activity, 1999). Therefore, it is reasonable to suggest that advancements in procurement strategy are more likely to be developed in industry practice due to the vast difference in their knowledge base.

Successful industry firms understand the importance of eliminating procurement process inefficiencies to increase financial performance (Moore et al., 2002). As a matter of fact, many of the strategies and methodologies that the government has implemented can trace their origins back to private companies (Moore et al., 2002). Carter (1996) asserts that the ultimate goal and purpose of all private firm strategies is to develop and

maintain a sustainable competitive advantage over other firms. One way that firms establish those competitive advantages is through process improvement (McGinnis et al., 1999). While the government is not in the business of making a profit, it nevertheless can benefit by implementing productive procedures into everyday use.

Benchmarking

Assuming that the chosen best-practices are useful and will fit the government's need, how then are they applied? One way is through benchmarking. Benchmarking is a "formalized attempt to compare and evaluate the products, services, and processes of organizations that are recognized as representing best practices against the corporation conducting the benchmarking" (Carr, 1999; Ellram et al., 2002). Camp (1989) credits Xerox with developing the concept of benchmarking. According to Camp (1989), Xerox executives used the practice to analyze their manufacturing costs and compare those costs, as well as selling price and copier capabilities, to those of their rivals. The examination was so useful to Xerox that management was prompted to redesign the company strategy. From that point on, other organizations saw the potential of benchmarking and began to adapt the practice to fit their specific needs.

Watson (1993) writes that organizations will benchmark exceptional firms whose business processes are comparable to their own through any methods that management finds useful (see Appendix C for a list of benchmarking resources that IBM employs). By doing so, the benchmarking company hopes to capitalize on the same successes as the organization being emulated and, as a result, develop into an improved firm (Watson, 1993). Further, benchmarking encourages management to enhance their communication

with other similar companies and push for continuous process improvement (Fong et al., 1998).

Beasley and Cook (1995) propose that the five main reasons for benchmarking are:

1. To change or strengthen company culture
2. To increase [a] competitive advantage
3. To create awareness
4. To enhance operational performance
5. To manage [a] company strategically

Collectively, these reasons emphasize benchmarking's main theme of improving all business operations and policies by analyzing the methods used by industry-leading firms (Beasley and Cook, 1995).

Spendolini (1992) and Watson (1993) assert that the majority, if not all, of Fortune 500 companies utilize benchmarking to improve their processes. While no precise recipe for benchmarking exists, Watson (1993) offers a version of the benchmarking process that encompasses the main points of the most commonly-presented styles. He explains the process through four steps, which are:

1. Planning the benchmarking project. During this step, company leadership must decide on specific goals that they wish to accomplish. Additionally, the process that is to be benchmarked must be documented and analyzed so that it is fully understood. If this is to be a group effort, criteria must be established for the potential benchmarking partners.
2. Collecting the necessary data. This step is externally focused. The intent of this step is to consolidate all applicable data that describes how the process to be benchmarked performs.
3. Analyzing the data for performance gaps and enablers. The goal of this step is to highlight compliant process enablers that are candidates for implementation. Watson (1993) writes that "process measures are used to

identify—by the magnitude of the relative performance gap between one’s own company and the process leader—which of the particular processes or process activities serve as performance enablers and, therefore, should be further investigated.”

4. Improving by adapting process enablers. Watson (1993) states that the purpose of this step “is to drive selected improvements into the organization by applying the knowledge learned during the benchmarking study.” It is in this final phase where it is determined whether or not the analyzed process is useful.

Watson’s four steps, as well as those views of Fong (1998) and Camp (1989), follow the fundamental quality method known as the Deming cycle, or PDSA cycle (Value Based Management, 2005). The Deming Cycle “is a continuous quality improvement model consisting of a logical sequence of four repetitive steps for continuous improvement and learning: Plan, Do, Study (Check) and Act” (Value Based Management, 2005). Figure 2.2 is a combination of the benchmarking phases as presented by Watson (1993) and the Deming Cycle format.

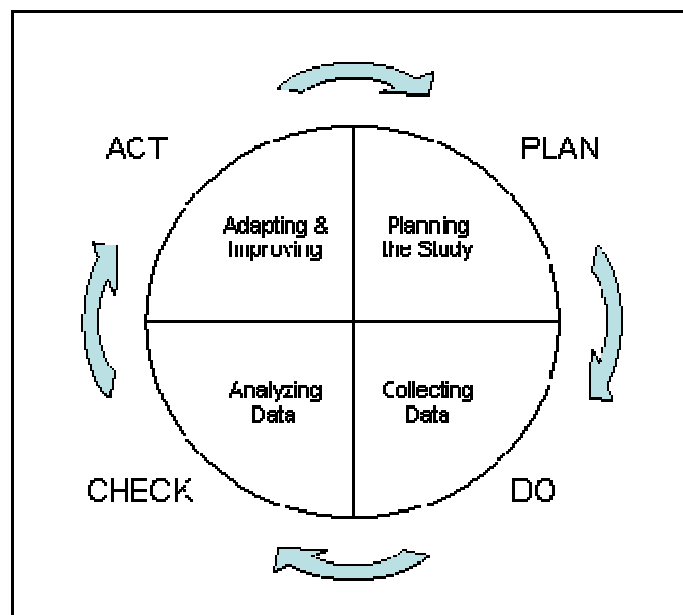


Figure 2.2 – The Deming Cycle (by W. Edwards Deming, presented by Watson, 2003)

Purchasing and Supply Management

Another best-practice that has found its way into the government's procurement processes is Purchasing and Supply Management (PSM). Chapman et al. (1998) loosely defines PSM as "a horizontal, integrated process that encompasses all key areas of spending and all core supplier networks—internal stakeholders and suppliers work as teams on continuous performance improvements and cost reductions." Ellram et al. (2002) asserts that PSM "can help the organization locate and align with the best suppliers in the industry" and "work to effectively and successfully reduce costs in the supply chain." Moore et al. (2002) writes that "purchased goods and services account for 50 to 80 percent of many firms' total expenditures" and about a third of the Air Force's entire budget. For these reasons, it is clear why Purchasing and Supply Management has become an integral part of corporate objectives. Moore et al. (2002) writes:

Innovative firms state PSM goals in terms of explicit targets for reduction in total ownership cost or improvements in the performance (e.g., quality, responsiveness, and flexibility) of internal production lines. Such goals allow these organizations to identify and track metrics that measure PSM performance over time, compare PSM performance with comparable performance in other firms, measure the performance of individuals and teams working on PSM activities and hold them accountable for this performance, and measure the performance of external sources and hold them accountable.

The role of a purchasing department must expand if PSM is to maximize its capabilities. Ellram et al. (1994) asserts that the "purchasing function [of a firm] has the ability to influence corporate profitability only when it is operating at a strategic level." In support of Ellram's view, Moore et al. (2002) suggests that senior management should, at a minimum, be able to:

- Develop and negotiate contracts

- Perform and analyze market research
- Assist supplier management
- Manage the integration of a supply base/chain
- Develop suppliers

Additionally, procurement personnel tasked with performing PSM functions should, at a minimum, be experts in contracting and their company's specific industry, as well as well-educated with respect to the technical and functional issues that may arise in their organization's particular field (Moore et al., 2002). Properly trained and strategically positioned purchasing and supply managers can work with the suppliers to ensure greater satisfaction between organizations, reduce the number and frequency of coordination problems, and as a result, improve performance (Trent and Monczka, 1998). Porter (1999) asserts that an increase in leveraged buying power was the most frequently occurring benefit realized by centralizing a firm's purchasing operation. Additional benefits that have also been reported are (Porter, 1999):

- An increase in the speed of decision making
- Consistency of quality, delivery, and other supplier performance gauges
- A reduction in the amount of necessary paperwork
- Common gauging techniques
- Greater opportunities for specialization among purchasing personnel
- Better use of purchasing talent and expertise

In a study by Ellram et al. (2002), the authors found that practicing PSM alone does not take a firm that has been performing badly, to the top of its industry. The authors found that PSM is "an integral part of a larger system." Their research suggests that

firms, or organizations such as the Air Force, must maintain focus on the procurement process as a whole and make improvements in all areas in need.

Spend Analysis

Benchmarking and PSM are two concepts that encourage company executives to analyze their business procedures for possible improvements, but focus mostly on strategy and less on actual dollar figures. Spend analysis, on the other hand, centers directly on the money spent to allow management to make adjustments wherever they see fit. More specifically, spend analysis has been defined as “an analysis of expenditures along dimensions such as type of commodity or service and suppliers, number of contracts and expenditures, and other variables showing how current money is spent on goods and services” (Moore et al., 2004). For the purpose of this thesis, spend analysis “answers basic questions about how much is being spent for what..., who are the suppliers, and where are the opportunities for leveraged buying to save money and improve performance” (GAO, 2003). The exact questions that are to be answered depend on the motivation behind the analysis. For example, a corporation that does not spend any money on employee business trips would not gather, analyze, and/or benchmark their company travel expenses because little would be gained from the study.

The data for spend analysis can take many forms and originate from various sources. As the definitions above illustrate, spend data can be any money spent on the procurement of goods or services, or even day-to-day business activities (Porter, 2003). The data could be taken from the personal expense accounts of senior management, the financial reports of potential suppliers, or possibly the number of contracts related to a

particular commodity (Porter et al., 2004). Moore et al. (2004) writes that the data used for spend analysis can “reveal targets of opportunity where altering purchasing practices could result in significant performance improvements or savings.” Porter et al. (2004) presents various company philosophies on spend data, as well as the methods of data collection, for many industry leaders. Some examples are (quoted from Porter et al., 2004):

- “IBM captures spend data in real time at two different points: when money is committed (often 30-60 days before it is paid out) and again when money goes out the door.” IBM considers their spend data “a direct link to the profit and loss metrics of each brand and group within IBM.”
- Honeywell captures spend data through a system which covers historic and current expenses. The technique allows managers a “way to spot strategic sourcing and spend management opportunities in real time.” Executives at Honeywell hope to integrate all 152 company locations into the automated data collection so enterprise-wide, as well as individual, assessments can be performed.
- Lucent Technologies collects spend data through a centralized procurement system which covers all procurement activities. The consolidated data provides analysts a “tool that acts as a single depository for payment, purchase order, and invoicing information.” Corporate executives view spend analysis as one of the key company functions which has kept the organization profitable through tough telecommunications industry downturns.

Carter et al. (2003) asserts that by applying spend analysis to business processes, procurement officials position themselves to institute procedures and/or checkpoints that deter and control random spending. Random spending refers to any expenses that have not been incorporated into a firm’s strategic purchasing plan. While it is unrealistic to imply that all business-related expenses can be foreseen, and therefore, planned for, by utilizing this technique, organizations are able to identify and improve their purchasing processes in areas where the greatest benefit can be realized—where exactly the change

occurs depends on the particular company and their long-range goals (Moore et al., 2004). Ojo (2003) provides an example of the benefits of spend analysis when combined with the commodity council process. The author reports in his study how Motorola employed spend analysis in company commodity councils to regain process efficiency and cut costs in order to maintain financial stability. Porter (2002a) provides the following list of examples of other major firms that have capitalized on the usefulness of spend analysis (quoted from Porter, 2002a):

- Walt Disney's chairman and CEO Michael D. Eisner claimed that the spend initiatives instituted as a result of spend analysis would save at least \$200 million annually
- BellSouth realized \$1.1 Billion in annual spend savings over a three-year span by utilizing spend analysis
- Maytag's global procurement group realized an annual savings of 6% of the company's total expenditures
- JCPenney's purchasing organization plans on saving more than \$100 Million based on their spend analysis findings

The U.S. General Accounting Office (GAO) asserts that the government's use of spend analysis has only just begun to take shape (GAO, 2003). In a pilot study directed by the Deputy Secretary of Defense, the GAO found that the DOD's spend analysis "efforts fall short of the private sector standard" (GAO, 2003). The study does acknowledge that comparing the government's need to those of industry firms is not an apples-to-apples evaluation. Additionally, the report states that not all organizations will be able to capitalize on the benefits of spend analysis because their purchases do not warrant its use. This fact, however, does not apply to commodity councils because their

resulting procurement strategies more than adequately justify the application of the practice. Table 2.2 summarizes the results of the pilot study mentioned above.

Table 2.2 – Spend Analysis Steps and Comparison (GAO, 2003)

Spend analysis process	Leading company practice	DOD practice
Automation	Data automatically compiled to expedite and repeat the spend analysis process.	DOD furnishes the data to the vendor, which may employ commercially available automation tools to compile the data to expedite the spend analysis. However, this is a one-time requirement. The vendor will not develop an automation tool to consistently repeat the spend analysis process.
Extraction	Essential data extracted from accounts payable and other internal systems.	DOD wants the pilot spend analysis to cover all its acquisition of services "as best possible". DOD will furnish only data extracted from two databases for services contract actions, but is excluding analysis of research and development services, and the databases do not include contracts for \$25,000 or less. DOD acknowledges this data may be insufficient, but also says that data that could be derived from better sources such as accounts payable or other internal systems may be neither available nor feasible to incorporate within the project's time frame.
Supplemental information	Additional data sought from internal and external sources, such as supplier performance and purchase card data.	The vendor may ask for DOD's help in getting supplemental data for the spend analysis from DOD, other government agencies, and commercial sources, such as purchase card and logistics data. While DOD will help, it cannot guarantee it can provide the data requested.
Organization	Ensure accuracy and completeness of data; organize data into logical, comprehensive categories of commodities and suppliers.	The vendor will cleanse and validate data DOD has furnished based on its spend analysis experience and knowledge. DOD allows the vendor's discretionary use of external databases to help organize the spend analysis database. The vendor may also propose classification systems to organize categories of commodities and suppliers, to meet DOD's requirement to identify the top ten service categories to target for strategic sourcing.
Analysis and strategic goals	Using standard reporting and analytical tools, data analyzed on a continual basis to support decisions in strategic sourcing and procurement management to help cut costs, streamline operations, reduce number of suppliers, achieve supplier diversity, etc. Scope generally covers entire procurement spending.	Within 60 days of contract award, the vendor must provide the key metrics for reviewing DOD's spend analysis database. Within 90 days, the vendor must analyze DOD's spend data, identify the top ten services contract areas with the largest dollar savings, and prepare business cases and strategic sourcing strategies for the top ten services in light of DOD's requirements to fulfill socioeconomic and establish savings goals. In the second phase, the vendor may have to supply special analyses to support the DOD team's review of the ten business cases and development of strategic sourcing procurement strategies for at least five pilot service categories.

Source: GAO analysis of DOD information.

Dickson (2003) justifies the government's use of spend analysis by pointing out that in fiscal year 2002, the government made 33 million different transactions (under \$25,000) that offer ample opportunity for improvement through analysis. The GAO (2003) writes that the "DOD can use spend analysis to understand its current level of supplier diversity on a commodity-by-commodity basis and to balance cost-savings and socio-economic goals." Further, the GAO contends that "spend analysis can also support

[the] DOD's efforts to comply with small business requirements" by reviewing bundling opportunities (discussed in the next section).

Consolidation of Contracts

The consolidation of contracts refers to combining multiple contracts, within a particular good or service category, for financial benefit (U.S. Congress, 2003). Before the application of this purchasing philosophy, the early construct of industry procurement followed a decentralized purchasing model whereby decision makers negotiated single-focus contracts that took several weeks to finalize (IBM, 2004a). This situation could be found in the Air Force as well and as a result of the lack of communication between purchasing officers, multiple contracts would often be negotiated for the same commodity or service. For example, in 2001, the Air Force spent (Department of the Air Force, Air Force Contracting, 2004):

- \$140 Million on custodial services through 80 purchasing offices, 239 new contracts, and 177 contractors
- \$76 Million on office furniture through 79 purchasing offices, 363 new contracts, and 179 contractors
- \$237 Million on the maintenance of office buildings through 69 purchasing offices, 358 new contracts, and 282 contractors

Carter (2003) posits that when several purchasing entities within one corporation purchase the same goods and services from multiple (or the same) providers at varying prices, the firm suffers a loss by not capitalizing on the available procurement leverage. To counteract this issue and to avoid wasting effort, government acquisition reforms include provisions to prevent any duplication of effort (with respect to supplier selection)

and to leverage the government's purchasing power through consolidated buys (Moore et al., 2004).

Industry leaders, as well as the DOD, have realized the benefits of centralized purchasing functions and negotiating long-term contracts with top-tier suppliers (IBM, 2004a and Moore et al., 2004). In a report to the Subcommittee on Readiness and Management Support, Committee on Armed Services (U.S. Senate), the GAO supported the shift in procurement contract design from the traditional structure to the improved, consolidated version (GAO, 2003).

At this point, a discussion of contract bundling is appropriate because of its relationship to the consolidation of contracts and this thesis. As stated above, the consolidation of contracts is combining multiple, existing contracts into fewer contracts in an effort to streamline the procurement process and lower costs. When the contracts are consolidated to "such an extent that they present a barrier to small businesses' ability to compete for such contracts," then they are considered "bundled" (GAO, 2000).

Specifically, the Federal Acquisition Regulation (FAR, 2004) defines bundling as "consolidating two or more requirements for supplies or services, previously provided or performed under separate smaller contracts, into a solicitation for a single contract that is likely to be unsuitable for award to a small business concern." The FAR lists certain conditions that would contribute to the inability of small business to supply the necessary goods or services, such as the size of the requirement or the geographical location of the small business in question. In general, contract bundling is viewed as a concept that undermines small business participation in government procurement strategies (GAO, 2000). However, the potential benefits that can be realized through this best-practice are

too great to be overlooked. The Office of Management and Budget supports this claim, as well as the importance of incorporating small business, in a report to the President of the United States. The report outlines a strategy to utilize the concept of bundling in conjunction with small business considerations (OMB, 2002). The report acknowledges the need to bundle certain contracts, and in those cases, the report requires the proposed contract to be reviewed and verified by the Offices of Small and Disadvantaged Business Utilization (OSDBU), and for the establishment of subcontracting opportunities for small business. The concern over contract bundling is important to any discussion of commodity councils, which implement, in essence, consolidated contracts (this point is addressed further in Chapter IV). Further, the DOD published a change to the Defense FAR Supplement (DFARS) in late 2004 that included new guidelines for the consolidation of federal contracts. The supplement stated that “agencies shall not consolidate contract requirements with a total value exceeding \$5,000,000 unless the acquisition strategy includes: (1) the results of market research; (2) identification of any alternative contracting approaches that would involve a lesser degree of consolidation; and (3) a determination by the senior procurement executive that the consolidation is necessary and justified” (DFARS, 2004). The supplement also states that “the objective of the rule is to ensure that decisions regarding consolidation of contract requirements are made with a view toward providing small business concerns with appropriate opportunities to participate in DOD procurements as prime contractors and subcontractors” (DFARS, 2004). This guidance emphasizes the need of enhancing the current Air Force commodity council process that makes no provisions for the new regulation.

Supply-Chain Operations Reference (SCOR) Model

The SCOR model is “a business process reference model which provides a comprehensive toolset linking business processes to metrics, best practices, and technology” (Stephens, 2001). The model “enables companies to communicate supply chain issues, measure their performance objectively, [and] identify performance improvement objectives” (Wang et al., 2004). Stephens (2001) writes that the SCOR model was developed by the Supply-Chain Council (SCC), a non-profit organization dedicated to supply chain issues and research. “Approximately 70 of the world’s leading manufacturing companies participated in SCOR’s development (Bauhof, 2004). Stephens (2001) asserts that the SCOR model has been used successfully to improve business operations in many different countries.

The original purpose of the model was to standardize the supply-chain process across suppliers. As the process evolved, it acquired two underlying goals. First, the “supply chain model promised a structure that would provide insight into the linkage between business objectives (strategic and tactical) and supply chain operations” (Stephens, 2001). Second, the developers were striving to establish an orderly process of evaluating and monitoring supply chain performance. The SCOR model covers the entire procurement process from a demand point of view—from when a demand or need is identified, to the point where that same demand or need is satisfied.

The model “spans all customer interactions (order entry through paid invoice), all physical material transactions (supplier’s supplier to customer’s customer, including equipment, supplies, spare parts, bulk product, software, etc.), and all market interactions

(from the understanding of aggregate demand to the fulfillment of each order)” (SCC, 2005). However, the model “does not attempt to describe every business process or activity...specifically, the model does not address sales and marketing (demand generation), product development, research and development, and some elements of post-delivery customer support” (SCC, 2005). Stephens (2001) asserts that by designing the model in this fashion, the tasks of modeling the entire process from beginning to end, as well as evaluating supplier performance, are simplified. Figure 2.3 is the theoretical SCOR model presented by SCC (2002) and SCC (2005).

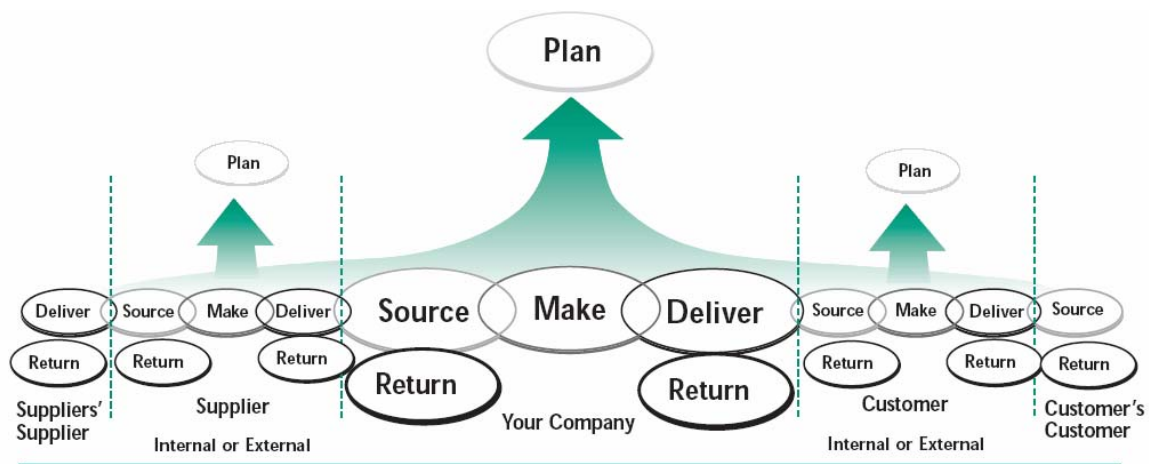


Figure 2.3 – Theoretical SCOR Model (SCC, 2002; SCC, 2005)

The SCOR model is built on five basic management processes used to depict supply chains: plan, source, make, deliver, and return (SCC, 2002). Table 2.3 describes each of the management processes.

Table 2.3 – SCOR Process Definitions (SCC, 2002)

SCOR Process	Definitions
Plan	Processes that balance aggregate demand and supply to develop a course of action which best meets sourcing, production and delivery requirements
Source	Processes that procure goods and services to meet planned or actual demand
Make	Processes that transform product to a finished state to meet planned or actual demand
Deliver	Processes that provide finished goods and services to meet planned or actual demand, typically including order management, transportation management, and distribution management
Return	Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support

Aside from the five processes stated above that provide structure to the model, there are also three distinct process types in the model. They are planning, execution, and enable (SCC, 2005). The three types are described as (quoted from SCC, 2005):

- A planning element is a process that aligns expected resources to meet expected demand requirements. Planning processes balance aggregated demand across a consistent planning horizon. Planning processes generally occur at regular intervals and can contribute to supply chain response time.
- Execution processes are triggered by planned or actual demand that changes the state of products. They include scheduling and sequencing, transforming materials and services, and moving product.
- Enable processes prepare, maintain, and manage information or relationships upon which planning and execution processes rely.

Although developed by an industry organization, the SCOR model is particularly appropriate when applied to the Air Force Commodity Council process model. Each council spiral focuses on a particular good or service (e.g., printing and imaging, laptops, specific medical supplies). Likewise, the SCOR model also focuses on one product or line of products. Stephens (2001) writes that “while a logistics analysis could describe

the logistics infrastructure for General Motors, the SCOR model would be an inappropriate tool; the SCOR model would be suited to describing the supply chain activities for a Corvette.” Wang et al (2004) agrees that the SCOR model spans many business segments by writing that “SCOR is a standard supply chain process reference model designed to embrace all industries.” The SCOR model is an outstanding illustration of how industry best-practices can be combined into a process model that can then be used to guide supply and purchasing strategies.

Summary – Industry Procurement Best-Practices

Best-practices utilized by industry firms have proven their worth through years of scrutiny by company analysts and numerous researchers. The methods listed in this section have been explored in this project due to their applicability to the problem at hand. All of them will be applied in some way to achieving an improved Air Force commodity council process.

COMMODITY COUNCILS

In this section, the concept of a commodity council is thoroughly detailed. This section will start with a definition of a commodity council, and then discuss its origin. Next, the process and benefits of a commodity council will be presented, followed by a description of the Air Force’s commodity council process and the official Air Force guidance that governs its actions. A summary of the major points is provided at the end of this section.

Definition

A commodity council is “a cross-functional sourcing group charged with formulating a centralized purchasing strategy and establishing contracts for enterprise-wide requirements for a selected commodity grouping” (Department of the Air Force, Air Force Contracting, 2004). Each grouping is an established category of goods or services (e.g., IT equipment or medical supplies) that can range in value.

According to Monczka et al. (2002) and IBM (2004b), commodity councils (or teams as Monczka refers to them as) are comprised of various members within an organization. Some common participants include buyers, procurement engineers, contract administrators, production control analysts, development council liaisons, finance personnel, and supplier diversity advocates. Commodity councils are typically managed by a senior procurement official who has some knowledge in, or of, the commodity involved (Minihan, 1998). Further, Minihan (1998) asserts that the greater the knowledge about the commodity the senior leader has, the greater their ability to negotiate leverage within the council.

Commodity Council Origin

Morgan (2003) credits R. Gene Richter, former IBM vice president of global procurement and chief procurement officer, with developing the concept of a commodity council. According to Morgan (2003), Richter developed commodity councils to handle the task of leveraging IBM’s purchasing power in the mid-1980s. Further, Morgan contends that Richter and his reengineering philosophies are the reasons that IBM has become a strategic purchasing trailblazer. Carbone (1999) suggests that Richter may

have implemented the concept while employed by Hewlett-Packard where he worked prior to IBM.

Following industry processes, the Air Force began developing and implementing commodity councils as part of SAF/AQC's procurement transformation effort (Bowman, 2004). Within SAF/AQC, commodity councils fall under the AF's Enterprise Architecture for Procurement (EAP), which outlines the future of Air Force contracting.

The Process

There is no standard course of action for an industry commodity council to follow. Avery presents one view of the commodity council process that is separated into five phases. These are (quoted from Avery, 1999):

- Phase I – Council members investigate, analyze, and formulate commodity strategy. They solicit support from upper management and identify key users. If these users are not known, members gather this information through purchasing, accounting, or other routes. Phase I also asks members to estimate savings potential and to determine whether the project should be tabled, terminated, or continued.
- Phase II - The [commodity council] team selects the supplier(s). Members benchmark with the best in the industry, develop and issue a request for purchase, and evaluate cost savings potential with supplier proposals.
- Phase III – The team negotiates terms and conditions and develops the contract(s) with approval of the legal department. Members make the final selection, sign the contract(s), and issue the purchase order(s).
- Phase IV – The team develops an implementation plan with the help of the supplier(s), and reports and publishes initial and ongoing total cost of ownership savings. Members develop and publish new policies and procedures.
- Phase V – This phase entails continuous improvement and supplier management activities. At this stage, the team coordinates and participates in

periodic reviews of supplier performance and adherence to contractual obligations.

Monczka et al. (2002) posits that the process consists of seven different steps as opposed to Avery's five. Figure 2.4 is the general commodity process as presented by Monczka et al. (2002). Notice that the process is similar to what Avery describes—a continuous loop where current strategies are improved with each cycle.

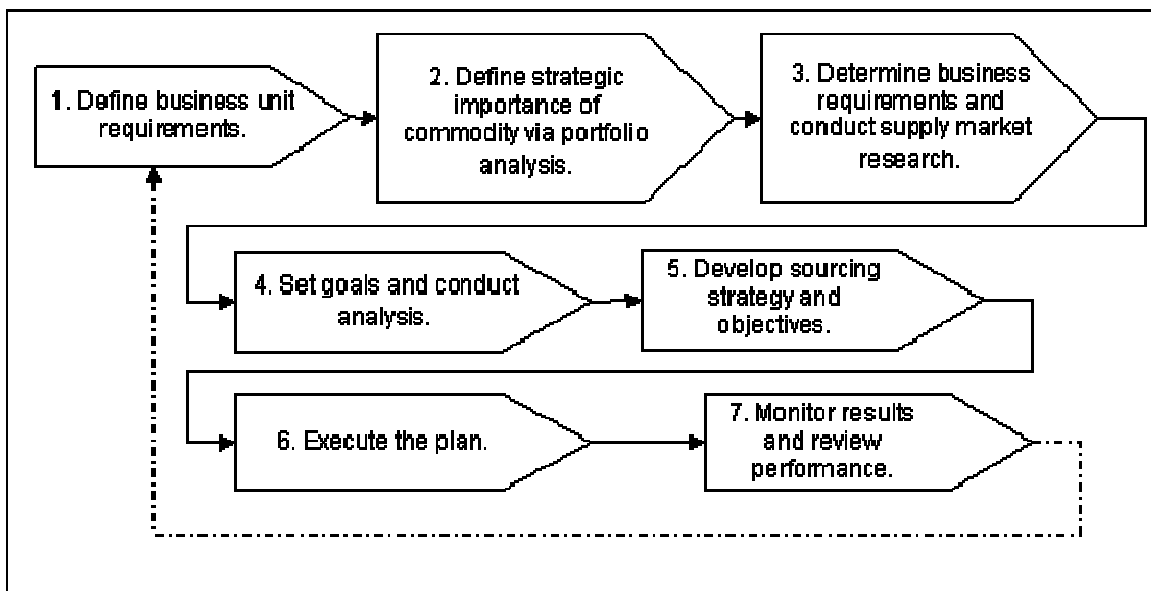


Figure 2.4 – A General Commodity Council Process (Monczka et al., 2002)

Ausink et al. (2004) proposes that the activities of a commodity council fall into one of two broad categories regardless of the number of specific steps. The categories are:

1. Strategic activities associated with designing the optimal sourcing strategy for the commodity group.
2. Implementation activities to execute purchases based on the optimal strategy.

The exact categorization of an activity depends on the view of the person performing the analysis.

In general, once the members of the council are chosen and brought together, they are tasked with formulating a “centralized purchasing strategy and establishing centralized contracts for enterprise-wide requirements for a specific commodity grouping” (U.S. Air Force, HQ Standard Systems Group, 2003). Minihan (1998) writes that council members decide on a supplier by rating all eligible suppliers based on a set of parameters determined by the commodity council members and their objectives. Decentralized procurement officers, acting on the council’s strategic sourcing decisions, then “execute tactical ordering against those pre-established business agreements” (U.S. Air Force, HQ Standard Systems Group, 2003).

The Benefits

Leading industry firms who have implemented commodity council strategies and concepts have a proven track record of radically reducing purchasing costs (U.S. Air Force, HQ Standard Systems Group, 2003). The following are some examples of how various organizations, both industry and government, have benefited from the use of commodity councils:

- In 2003, an Air Force commodity council saved 22% on a consolidated computer purchase by leveraging the enormous buying power of the government and acquiring roughly 12,500 computers for the price of 10,000 computers (Bazinet, 2003).
- Morgan (2003) writes that commodity councils reduce the number of suppliers by weeding out those which do not meet firm goals.
- Gottlieb (2004) reports that the initial results from DOD commodity councils is promising, with one commodity council meeting resulting in on-time deliveries improving from 40% to 89% on a spares contract, acquisition lead-time dropped from 136 days to fewer than 25 (the average for which was 660

days before the commodity council decision), and a one-time \$55 Million savings in inventory reduction.

- Arnold (2004) writes about how Coca-Cola Enterprises© increased their purchasing efficiency by first benchmarking the procurement practices of 22 Fortune 100 companies, and then using the benchmarking results to guide their commodity council strategy.
- Minihan (1996) and Smock (2002) describe how IBM has used the commodity council concept to become an industry leader in global procurement and save hundreds of millions of dollars on purchasing

The Air Force Commodity Council Process

Like many industry firms, the Air Force uses commodity councils to maximize its enormous buying power (U.S. Air Force, HQ Standard Systems Group, 2003). Further, the Air Force is using the commodity council process to ease the shift of military procurement focus from a tactical perspective to a strategic perspective by developing service-wide commodity strategies to “integrate customers and suppliers” that results in “driving commonality and standardization” (U.S. Air Force, HQ Standard Systems Group, 2003). This shift in acquisition philosophy is unlike the traditional Air Force method of purchasing goods and services. USAF/SSG writes

Typically, the AF's current procurement strategy does not leverage overall AF buying power. Although the AF has achieved some consolidation of requirements in certain “pockets of excellence,” the AF generally relies upon local strategy and execution to fulfill individual unit requirements. This results in multiple, decentralized sourcing strategies that tend to increase the overall prices that the AF has to pay for goods and services. This decentralized approach also decreases the AF's ability to influence its suppliers across the enterprise. Creating a commodity council approach at an enterprise level changes this process and will allow the AF to better leverage its buying power to reduce the unit cost for goods and services and to improve customer responsiveness (U.S. Air Force, HQ Standard Systems Group, 2003).

According to Hurley (2003), the three main objectives of an Air Force commodity council are to:

1. Satisfy unit requirements
2. Reduce the total cost of ownership
3. Leverage buying power

The total cost of ownership is defined as “a term that describes all costs associated with acquiring, supporting, and disposing of an item or system” (US Navy, 2005). To leverage buying power means to use the size of an organization’s procurement budget to gain an advantage.

The IT Commodity Council Communication Plan (U.S. Air Force, HQ Standard Systems Group, 2003) and Bowman (2004) offer more extensive lists of commodity council objectives specifically tailored to the commodity being purchased.

An Air Force commodity council is comprised of “cross-functional representatives...to ensure adequate representation from the AF” (Department of the Air Force, AFFARS, 2004). Members may be commodity experts, or have experience in “procurement, market analysis, project management, business processes, acquisition strategy, and analysis.” The exact “team size and composition may vary according to the commodity and workload.” Generally, there are four to six full-time members who monitor the day to day activities of the council (Bowman, 2004). Figure 2.5 is a visual representation of a commodity council’s hierarchy (Department of the Air Force, AFFARS, 2004).

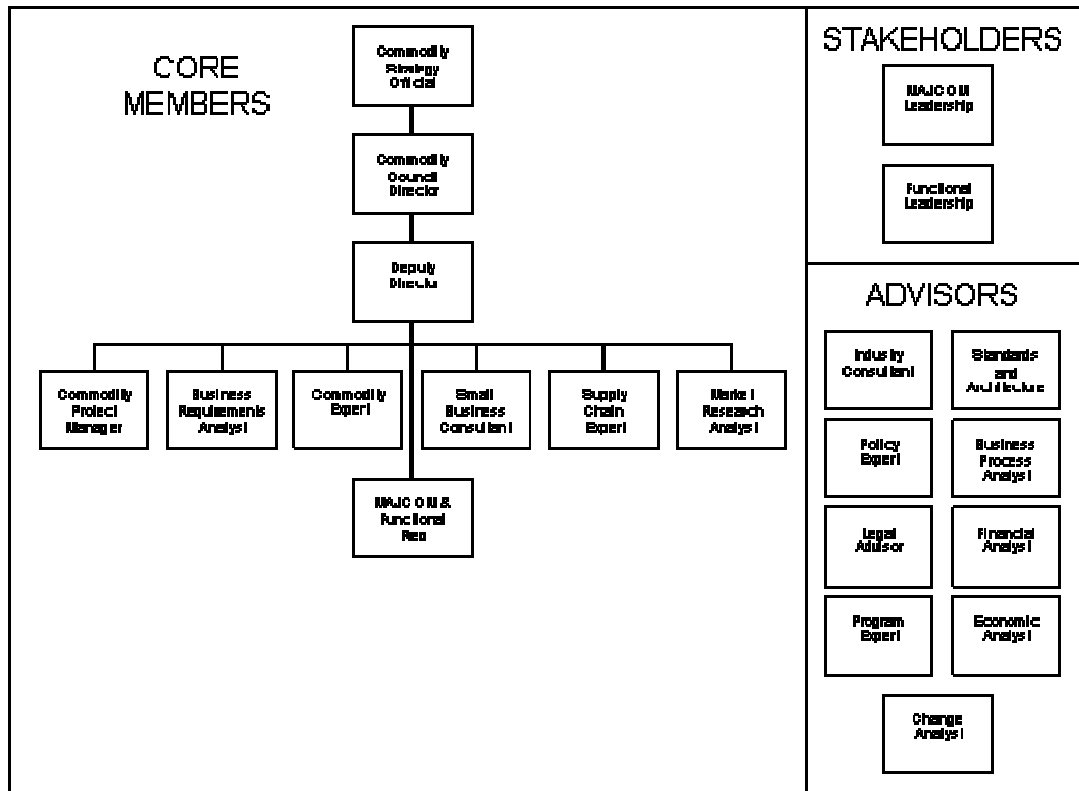


Figure 2.5 – Commodity Council Member Hierarchy (Department of the Air Force, AFFARS, 2004)

The Commodity Acquisition Management Plan (CAMP) is the “overall plan for managing and developing the commodity strategy across the Air Force” (U.S. Air Force, HQ Standard Systems Group, 2003). Not only does the CAMP formalize the council-approved strategy, but it documents all commodity council philosophies, strategic objectives, strategic performance metrics, and the strategy development process that is to be followed for all similar commodity categories (U.S. Air Force, HQ Standard Systems Group, 2003). Additionally, the CAMP provides extensive analysis on current buying strategy, contracting strategy, and life-cycle support strategy (U.S. Air Force, HQ Standard Systems Group, 2003).

The CAMP is made up of two distinct parts: (1) the “over-arching management plan that contains the guiding principles, initial strategic objectives, and operating processes that will be used for all strategy spiral developments;” and (2) the individual annexes to the CAMP which are developed for each specific product area. (U.S. Air Force, HQ Standard Systems Group, 2003). The Commodity Strategy Official (CSO) must review and approve the CAMP before it is implemented (U.S. Air Force, HQ Standard Systems Group, 2003). Figure 2.6 is a visual depiction of the CAMP structure used by the Air Force (Gaylord, 2004).

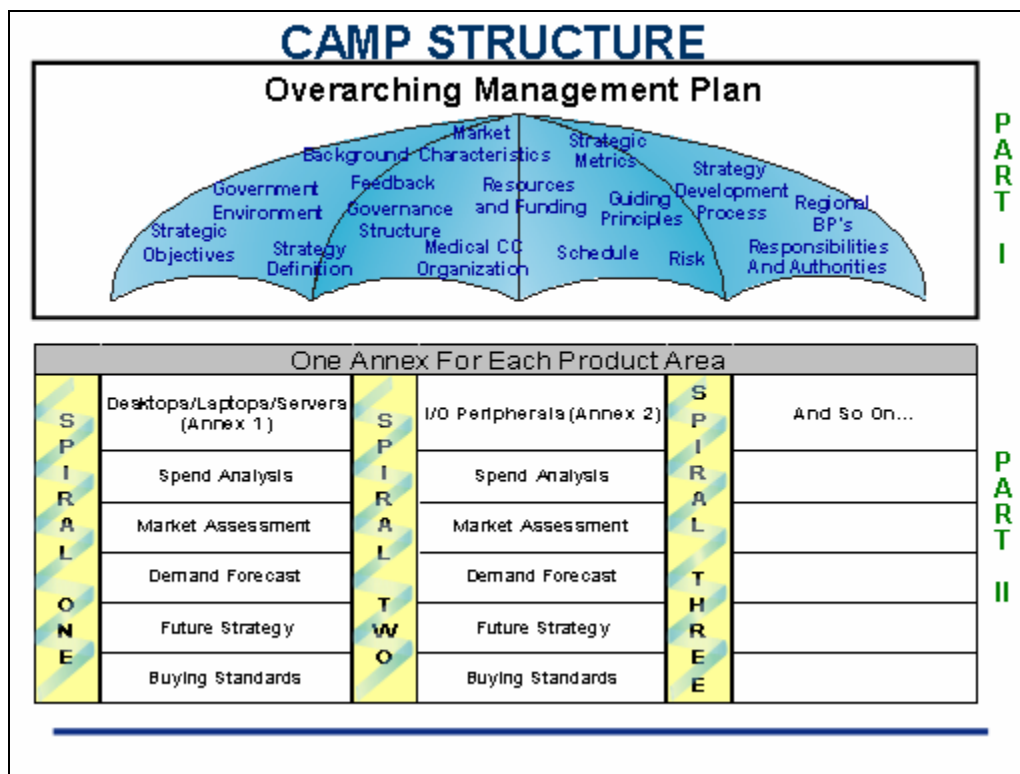


Figure 2.6 – CAMP Structure

The Air Force commodity council process is pictured in Figure 2.7 (U.S. Air Force, HQ Standard Systems Group, 2003). The picture depicts a looping, continuous process.

New commodity councils would begin with the “Review Current Strategy” stage that can be seen in Appendix D. Appendix D also contains a step-by-step breakout of the Air Force’s commodity council process (Department of the Air Force, AFFARS, 2004).



Figure 2.7 – Air Force Commodity Council Process

Official Air Force Commodity Council Guidance

Unlike industry commodity councils, Air Force commodity councils must “comply with all federal regulations, DOD directives, and Air Force policies” (U.S. Air Force, HQ Standard Systems Group, 2003), and cannot design purchasing strategies that cross fiscal years for certain goods and services (e.g., base-level custodial services). The Air Force Federal Acquisition Regulation Supplement (AFFARS) IG5307.104-93 outlines the implementation and operation for Air Force commodity councils. Some individual spirals have developed their own council plans to further define their strategies and goals, such as the Information Technology (IT) Commodity Council Communication Plan (U.S. Air Force, HQ Standard Systems Group, 2003) which outlines, in detail, the guidance, goals, implementation, and follow-up of an Air Force commodity council for IT. However, the AFFARS supersedes any local regulation.

Summary – Commodity Councils

The commodity council concept is a flexible strategic purchasing tool that has been adopted by Air Force officials to maximize the purchasing power of Air Force budgets. Purchasing strategies cannot be developed with cook-book precision as every spiral has its own special nuances; however, there are general steps that must be taken if the developed purchasing decisions are to be truly effective and beneficial. Senior leadership of industry and DOD organizations see great promise in utilizing the process in the future and the list of successful applications of the tool has grown. For the Air Force, this research is a step towards improving the commodity council process to better serve the Air Force.

THE IMPORTANCE OF SMALL BUSINESS

Small businesses are an essential element of the United States economy. They are a source of innovation and technology, many job opportunities, and over half of the GDP. The federal government recognizes the importance of supporting small businesses, and has implemented a number of laws and regulations to direct and guide the participation of smaller firms within the federal acquisition process.

Small business participation is a primary focus of this research. As such, an explanation of small business, as well as reasoning for supporting small firms is required—this section accomplishes both tasks. First, a brief description of a small business is presented. The contributions of small business to the workforce, the economy, and technology are offered subsequently. This section concludes with the

major regulations regarding small business participation in government procurement and a brief summary of the major points of the entire section.

What Is A Small Business?

The Air Force Outreach Program Office (AFOPO) states that a small business is a business that is independently owned and operated, is not dominant in the field of operation in which it is bidding on government contracts, and qualifies as a small business under the criteria and size standards in the FAR (section 19.102). There are a number of conditions for determining if a business is considered small or not. Some focus on number of employees, while others focus on annual sales—the exact qualifications depend on the industry. The AFOPO’s definition of a small business will be used for this thesis.

Contributions to the Workforce

Small businesses in the United States play an important role when it comes to providing jobs for Americans. The SBA reports that small businesses “represent 99.7 percent of all employers, employ half of all private sector employees, pay 44.3 percent of the total U.S. private payroll, [and] generate 60 to 80 percent of net new jobs annually (over the last decade)” (SBA, 2004). The National Federation of Independent Business (NFIB) Policy Guide (2003) asserts that small business has created two-thirds of all new jobs in the United States since 1970. Table 2.4 presents a summary of the new jobs created by small firms over a 25 year span. Net new jobs are equal to all jobs created

minus all jobs eliminated. Denes (1997) and Birch (1979) provide support by stating that small businesses create new jobs at a faster rate than large firms.

Table 2.4 – Small Business Job Generation since 1970 (Adapted from NFIB Policy Guide, 2003)

Small Business Job Generation				
Years	Net New Jobs	<20 Employees	20-499 Employees	500+ Employees
1990-95	6,853,000	49.0%	27.5%	23.5%
1988-90	2,666,000	150.7%	-31.9%	-18.8%
1986-88	6,169,000	24.1%	20.8%	55.1%
1984-86	4,611,000	35.5%	16.8%	47.7%
1982-84	4,318,000	48.8%	27.9%	23.3%
1980-82	1,542,000	97.9%	-2.4%	4.5%
1978-80	5,777,000	26.3%	18.8%	54.9%
1976-78	6,062,000	38.2%	34.5%	27.3%
1969-76	6,759,000	66.0%	20.7%	13.3%

Contributions to the Economy

The number of small businesses in the U.S. is so large and ever-changing that it is unknown exactly how many organizations exist (NFIB, 2003). In 2003, it was estimated that there were 23.7 million small firms in the United States (SBA, 2004). With such a significant force, it is reasonable to assume that the effect on the economy by small businesses is substantial, and previous research supports this assumption. In 1997, the SBA reported that small firms made up roughly half of the private-sector Gross Domestic Product (SBA, 1997). Figure 2.8 adds support to SBA's claim by illustrating that U.S. small businesses were the third-largest economy in the world based on their contributions in 1997 (NFIB, 2003).

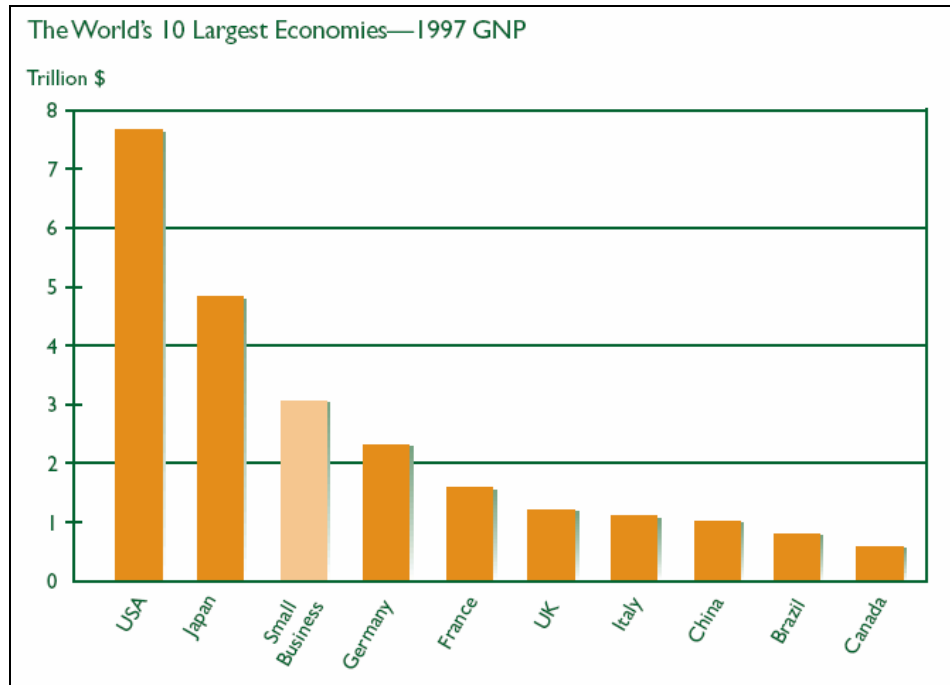


Figure 2.8 – Ten Largest Economies in 1997 (NFIB, 2003)

Many researchers contend that small business is vital to the United States economy.

Acs and Audretsch (1998) write that small businesses enhance the U.S. economy through advancements in technology and business, as well as through the creation of new jobs.

Audretsch (2003) asserts that over the last decade, the United States has seen a reemergence of business competitiveness and growth due to the drive and dedication of small firm employees. Many scholars believe that small business is not only an important component of the economy now, but that it will remain as such for years to come. Mazzarol (2000) writes that “at the commencement of the new millennium small businesses are being heralded as the engine of economic growth, the incubator of innovation, and the solution to decades of persistent unemployment. The fulfillment of the enormous potential of the sector has been a consistent theme since the commencement of the industrial revolution.”

Contributions to Technology

Small businesses can be more innovative than large businesses (Denes, 1997; Birch, 1979). When a small firm grows, it can adapt to change more easily because of its ability to adjust day-to-day operations quicker while maintaining communication among the levels of management (Denes, 1997; Moguee, 2003). The continuous communication allows for the creation, realization, and adaptation of innovative business processes through a much shorter chain of command than a larger firm might require. Further, when an innovative idea is presented, small businesses (more often than large businesses) assume the risks associated with incorporating the method because the benefits of the new processes are necessary to stay competitive, whereas the benefits may not be worth a larger firm's effort (National Academy of Engineering, 1995; Acs and Audretsch, 1998).

The National Federation of Independent Business asserts that small businesses are responsible for the "creation of the personal computer, the pacemaker, pre-stressed concrete, overnight mail delivery, and fast-food franchising" (NFIB, 2003). Acs (1999) contends that small firms excel in innovation because they "specialize in knowledge-based rather than resource-based innovation, property rights are more likely to accrue to the innovator working in a small firm, and hundreds if not thousands working independently in various directions are more likely to discover the needle in a haystack than a single [exhaustive] search." The SBA supports Acs's theory by reporting that small firms "produce 13 to 14 times more patents per employee than large patenting firms and employ 39 percent of high tech workers (such as scientists, engineers, and computer workers)."

In a report by Chi Research (2003), the authors assert that small businesses will continue to contribute more technological advances (patents and innovative business practices) to the world economy than large firms. Further, the report states that the advances made by small firms will be more technically important than those developed by large firms because those ideas generated by the smaller organizations have a greater propensity for utilization (Chi, 2003).

Regulations Concerned With Small Business

Congress has passed legislation designed to incorporate small business into the government procurement process (Denes, 1997). Pike (2004) provides a summary of past and present statutes and regulations that have been passed in support of small business. The following are the major statutes and regulations that have shaped the current environment with respect to small business (quoted from Pike, 2004).

The Small Business Act of 1953 (Public Law 85-536) – Established the Small Business Administration (SBA) as an independent agency within the Federal government.

Amendment to the Small Business Act (Public Law 94-305) – Created an Office of Advocacy within the SBA. The office is responsible for evaluating small business involvement within federal agencies, and offering improvements.

Small Business Innovation Development Act of 1982 (Public Law 97-219)
– Created the Small Business Innovative Research (SBIR) program requiring federal agencies to set goals for reaching research and development agreements with small businesses.

National Defense Authorization Act for Fiscal Year 1987 (Public Law 99-661) – Established specific goals for the DoD in small business concerns, Historically Black Colleges and Universities (HBCUs), and minority institutions.

Small Business Technology Transfer Act of 1992 (Public Law 102-564) – Created the Small Business Technology Transfer (STTR) program that reserves a set percentage of each federal agency’s research and development effort for small businesses in a format similar to the SBIR program.

Federal Acquisition Streamlining Act of 1994 (Public Law 103-355) – Reserved all federal procurements between \$2,500 and \$100,000 for small businesses.

Small Business Reauthorization Act of 1997 (Public Law 105-135) – Established the Historically Underutilized Business Zone (HUBZone) program and the Service Disabled Veteran’s program. Both programs had the goal of increasing federal agency contracting with each set of small businesses. This act amended the Small Business Act by “Requiring each federal agency to (1) foster the participation of small businesses as prime contractors, subcontractors, and suppliers; (2) structure its contracting requirements to facilitate competition by and among small businesses; and (3) avoid the unnecessary and unjustified bundling of contracts that precludes small business participation as prime contractors” (United States Congress, 1997: Title IV, Subtitle B).

The Federal Acquisition Regulation (FAR) provides the guidelines for the procurement of supplies and services for the federal government. Each agency within the government provides a supplement, including the DoD Federal

Acquisition Regulations (DFARs) and the Air Force Federal Acquisition Regulations (AFFARs). Each supplement must comply with the FAR. Part 19 of the FAR is titled Small Business Programs. As its name indicates, this section provides guidance for federal purchasing through small firms.

Small vs. Large Business

Not all research has found small business to be superior to larger business. Nguyen et al. (2002) presents the findings of previous research which found that (1) “the economic performance of small firms is lower than that of large firms, regardless of whether performance is measured by productivity, efficiency, or profitability”; (2) “the rates of entry and exit are inversely related to size for U.S. manufacturing plants and firms”; and (3) small establishments use less advanced technology than large ones.” Nguyen et al. suggests that the previous research shows small businesses “to perform at a lower level than large establishments and firms.” Nguyen’s views illustrate the contrasting views that exist with respect to the value of small business.

Summary – The Importance of Small Business

This section has presented small business—who they are and why they are important. It has also reviewed important aspects and contributions of small business, as well as legislation that directs small business participation in government procurement strategies.

CHAPTER CONCLUSION

This chapter has provided the background information necessary to begin answering the research questions presented in Chapter I. It has presented the history, current state, and desired state of government procurement. Additionally, this chapter has offered a few industry procurement best-practices which are applicable to this thesis, a detailed description of industry and Air Force commodity councils, and discussed the importance of small business. The next chapter presents the methodology used to answer the research questions.

III. Methodology

CHAPTER INTRODUCTION

This chapter describes the methodology employed to obtain and examine data for this thesis. This is a qualitative study of strategic sourcing processes and how they address small business utilization. In particular, the study takes a closer look at the Air Force commodity council process. It is exploratory in nature due the limited research previously conducted in this area.

Qualitative research was chosen because, as Hoepfl (1997) asserts, qualitative methods work well to “better understand any phenomenon about which little is yet known.” The author also writes that qualitative research can “be used to gain new perspectives on things about which much is already known, or to gain more in-depth information that may be difficult to convey quantitatively.” The ultimate goal of this research is to gather and apply valuable information designed to enhance the strategic sourcing strategies that seek greater small business participation.

RESEARCH HYPOTHESIS

A hypothesis was generated to guide this research. It was based on the research questions presented in Chapter I.

The null hypothesis is:

- * Considering industry best practices and philosophies, the current Air Force commodity council process properly incorporates small business participation.

The alternative hypothesis is:

* Considering industry best practices and philosophies, the current Air Force commodity council process does not properly incorporate small business participation.

DATA

Two sources of data were used for this thesis. The first source of data included program documentation on conducting strategic sourcing and supplier rationalization from both industry and the federal government (i.e., the Air Force) as performed in commodity councils. The second source of data was the information derived from surveys with ten industry representatives. The surveys were designed to gain a better understanding of specific processes and/or procedures that industry firms employ to include small business participation in commodity council strategies.

DATA COLLECTION

This section discusses the survey instrument, its design, and its application. The survey instrument was developed in adherence with AFI 36-2601, *Air Force Personnel Survey Program*. The survey AFRL/HEH Case Log Approval number was F-WR-2005-0020-E.

Survey Instrument

Fink et al (1983) writes that a “survey is a method of collecting information from people about their ideas, feelings, plans, beliefs, and social, educational, and financial background.” The authors also write that a survey “usually takes the form of questionnaires and interviews.” To gather the necessary data, a five-item questionnaire was created. The questionnaire was disseminated to the participants via email and allowed for the responses to be submitted in writing. Upon reviewing the participant responses, four follow-up interviews were conducted to obtain additional information and/or clarification. While most of the participant’s submissions were thorough, Fink et al (1983) points out that with interviews, it is possible to gather more detailed information than can be gathered by a written questionnaire due to the interviewee’s ability to elaborate easily. Therefore, interviews were used to supplement the questionnaire as needed.

Fink et al. (1983) asserts that “for clarity, questionnaires and interviews should contain general directions.” Based on this suggestion, the survey was developed with a set of simple and clear instructions for use. All of the questions were written as succinct and objective as possible to avoid bias.

A major point made by both Fink et al (1983) and Rossi et al (1983) was the importance of pilot testing, or pre-testing the survey. These authors emphasized the need to perform pilot tests in order to smooth out the survey questions and the survey design. In accordance with their guidance, the survey was administered to five individuals from various professional and educational backgrounds. Their suggestions were incorporated into the survey.

Confidentiality

Fink et al (1983) and Rossi et al (1983) stress the significance of maintaining the confidentiality of the respondents (this was also a requirement of the Air Force Institute of Technology). Accordingly, the following steps were taken to ensure complete confidentiality of those surveyed. First, only the researcher maintained any information on the respondents (e.g., identity, contact information). Second, to support anonymity, the respondents are not identified in the study by name or specific job title—only nameless references are included. The third step taken was that all information about the individuals was kept in a secure location for the duration of the research period. The fourth and final step taken was the complete and immediate destruction of all respondent personal information upon completion of the thesis.

Participant Selection

Two resources were used to select industry firms to participate in the data collection for this thesis: the Fortune 500 listing for 2004 and Government Executive Magazine's listing of the top defense contractors for 2002. The Fortune 500 list, a listing of the nation's 500 largest companies, was chosen because Fortune Magazine is a reputable news source and it is reasonable to assume that companies on this list must be proficient at managing firm resources and strategies. Government Executive Magazine was selected because this thesis aims to improve an Air Force process and it is also reasonable to assert that the companies on this list are proficient in managing their activities. The two lists were used in conjunction, not separately.

Survey Participants

In the selection of the firms surveyed in this study, a company was randomly chosen from the Government Executive list. Their name was then cross-referenced with the Fortune 500 list. The firms that appeared on both lists were then contacted by obtaining the name of a senior procurement and/or strategic purchasing official as identified on their website. I then contacted the individuals and explained the study.

A total of 22 firms were contacted, and 10 agreed to participate in the survey. All provided an individual who was part of upper-level management and who had an important say in the development of company strategy. The average years of experience within procurement and/or with small business was 17.4 years. With the exception of one company, all had extensive experience with selling to the Department of Defense. All companies also indicated that they had experience with including small business in their procurement strategies, as well as treating company purchasing as a strategic tool rather than a common day-to-day activity.

Sample Size

To determine the sample size needed, three main points were considered. First, this survey was not intended for a random sampling of business executives, but rather a deliberate selection of industry procurement management with expert knowledge of company purchasing strategy and execution. Second, time constraints of the senior managers had to be considered to ensure that the surveys were completed in a period that would allow for thorough study. Third, the open-ended question design of the survey

meant that responses could be as short as one sentence, or as long as a book. If too many surveys were administered, it would be possible that some of the information could be overlooked. If not enough surveys were administered, it could be possible that the variances of opinion would be too great to make the data useful. In the end, a sample size of 10 companies was determined as sufficient.

QUALITATIVE INTERVIEWS

Open-ended interview questions were developed and utilized to significantly enhance the information obtained by the participants. Below is a list of the five questions used. A brief description of the rationale for each question is provided. An original copy of the survey instrument can be found in Appendix E.

ITEM 1: What goals do you have that ensure small business participation throughout the commodity council process? If you do not have any, what goals would you suggest be set to ensure small business participation throughout the process? This question addressed research questions 1 and 1a, and investigative question 7. It was intended to gather the larger/broader, executive-level goals and strategies of the firms.

ITEM 2: What specific steps do you perform to include small business in your procurement strategy? If you do not perform any, what steps would you add to ensure small business participation throughout the process? This question addressed all of the research questions and investigative questions 7 through 10. It was intended to gather more specific information on how the goals and strategies from Item 1 were accomplished.

ITEM 3: What steps do you follow to develop your supplier relations? This question addressed research questions 2 and 2a, and investigative questions 3a and 7. The importance of establishing and cultivating a relationship with a supplier has been researched by a number of authors (Ellram, 1994; Moore, 2004; Sarkis, 2002). By developing supplier relationships, firms gain an understanding of supplier capabilities and performance. Further, it is less likely that a supplier will be overlooked if an ongoing association exists. This question was designed to gather the beneficial methods of developing supplier relationships used by industry firms.

ITEM 4: What factors do you feel are important when selecting a supplier? Additionally, how do you determine whether or not each factor is acceptable? This question addressed research question 2 and 2a, and investigative questions 3a and 7. It was designed to derive detailed information on supplier evaluation methods used by industry firms.

ITEM 5: Do you recommend anyone else I should speak with? Please provide their complete contact information. The purpose of this question was to strengthen the information gathering process in the case that additional valuable information could be obtained. It also provided the respondents the opportunity to refer other individuals they thought might lend additional information.

Survey Data Analysis

The primary source of data for this study was obtained through questionnaires. Once all of the electronic responses were received, and notes from the follow-up interviews with four of the ten companies were documented electronically, the data was analyzed manually with the assistance of a coding program.

Miles et al. (1984) defines a code as “an abbreviation or symbol applied to a segment of words—most often a sentence or paragraph or transcribed notes—in order to classify the words.” Miles also writes that codes are “retrieval and organizing devices that allow the analyst to spot quickly, pull out, then cluster all of the segments relating to the particular questions, hypothesis, concept, or theme...clustering sets the stage for analysis.”

For this research, codes took one of three forms: (1) descriptive; (2) interpretive; and (3) explanatory. The descriptive codes were used to attribute “a class of phenomena to a segment of text” (Miles et al., 1984). The segments of text fell into two classes: Small Business (SB) and Selection Process (SP). The majority (roughly 74%) of the survey responses fell into the SP class.

After the descriptive codes were assigned, interpretive codes were then used to further segment and understand the text. The interpretive codes used were:

- Commodity Council (CC) – Used for those responses that referenced the use of commodity teams/councils
- Corporate Direction (CD) – Used for those responses that seemed directed/motivated by executive guidance
- Financial Benefit (FB) – Used for those responses that seemed directed/motivated by the need to gain a financial benefit

- Information (I) – Used for those responses that addressed the use of financial data, supplier evaluation scores, central supplier databases, etc.
- Procurement Strategy (PS) – Used for those responses that seemed directed at guiding a company's procurement strategy
- Supplier Development (SD) – Used for those responses that addressed developing supplier capabilities
- Supplier Evaluation (SE) – Used for those responses that addressed evaluating suppliers
- Supplier Relationships (SR) – Used for those responses that addressed cultivating supplier relationships
- Supplier Selection (SS) – Used for those responses that addressed the actual selection of a supplier (or suppliers)

An example of a response that was first classified as SB, and then was interpreted as related to a corporate strategy would have the final code of SB-CD. It was possible for a response to have multiple interpretive codes. Building on the previous example, if the response was also interpreted as related to evaluating suppliers and fostering supplier relationships, the final code would then be SB-CD/SE/SR.

Explanatory codes were used to indicate main leitmotiv or patterns in the data. The resulting codes (better described as themes) were established through noting and evaluating obvious patterns (Miles et al., 1984). Additionally, the responses were categorized and clustered together, factored to determine any commonality, and then finally positioned into a theoretical coherence (Miles et al, 1984). The coding resulted in the identification of 72 different business behaviors/philosophies in 5 main themes—these are discussed further in the next chapter (the term 'business behaviors/philosophies' is used to describe the survey responses).

TRIANGULATION

Triangulation is defined as “the use of multiple [research] methods in the study of the same object” (Denzin, 1970). Maanen (1983) asserts that qualitative studies of this sort can “improve the accuracy of their judgments” by using a triangulation of multiple methods. Maanen believes that by using multiple research methods to analyze a subject that is not cut and dry, the weaknesses inherent in one method will be offset by the strengths of the other methods. “Triangulation can be applied to many elements of research methods, including strategies, settings for data collections, and sources of data (single versus multiple)” (Scandura et al., 2000). Further, “the use of a variety of methods to examine a topic might result in a more robust and generalizable set of findings” resulting in management’s ability to make decisions with “greater clarity and confidence” (Scandura et al., 2000). The concept of triangulation has not only been employed in other research endeavors (see Colgate, 1998; Cunningham et al., 2000; and Hacker et al., 1998), but the method itself has also been examined, scrutinized, and validated (see Davies, 2003 and Scandura et al., 2000).

The unit of focus for the triangulation was the Air Force commodity council process and how small business and industry business practices were incorporated into that process. The methods used to study the unit of focus were qualitative research consisting of survey responses and industry source selection documents, and business process modeling that consists of Air Force commodity council process and historical documents, government contracting guidelines, and literature review of strategic purchasing/source selection materials. Three of the components are explained further below. Figure 3.1 is a visual depiction of the methodology of this thesis.

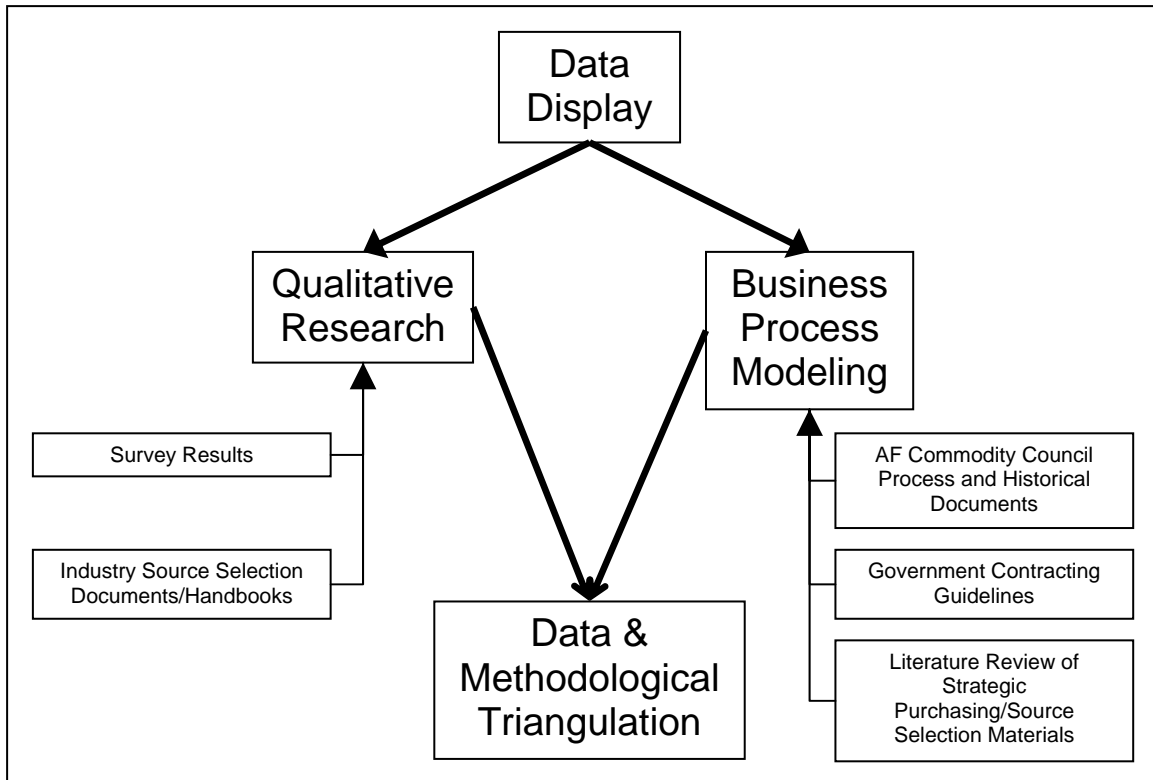


Figure 3.1 – Information Triangulation Framework

An in-depth literature review of strategic purchasing and source selection materials. Five industry practices were presented in Chapter II. Purchasing and supply management, spend analysis, and the consolidation of contracts were chosen because they represented the actions that a commodity council performs during the decision process. Understanding these practices completely resulted in a thorough study of the current process model, as well as the questionnaire responses. The SCOR model was selected because it focuses on improving a procurement process through the incorporation of valuable information. Benchmarking was performed throughout this thesis, e.g., this research mimicked those industry practices and ideas for incorporating small business. This component of the triangulation methodology was designed to offset

any weaknesses of the survey data (e.g., incomplete information, missing components of corporate strategies, insufficient background, etc).

Survey results from industry purchasing officers and/or commodity council members, and any reviewed industry source selection documents. If the enhancements to the commodity council process were to be truly productive, then it was imperative to gather the views of those persons who have extensive experience with council deliberations and strategic purchasing. Further, because the commodity council concept was relatively new to the Air Force as opposed to industry practice, it was reasonable to gather the opinions of experts from industry and not the Air Force. The survey instrument was developed to gather the necessary data due to the absence of previous studies dealing with this topic. This component of the triangulation methodology makes up for the areas of the literature review where sufficient information is not available (e.g., no business practices for including small business in company procurement strategies).

The current Air Force commodity council process and associated historical documents, and government contracting guidelines. This component of the triangulation methodology was the basis for the new process. This research did not develop a new process from scratch, but rather enriched the previous version.

BUSINESS PROCESS MODELING

Business process modeling is defined as “the techniques for characterizing and analyzing business processes” (Luo et al., 1999). A business process is “a set of logically related tasks performed to achieve a defined business outcome” (Davenport et al., 1990).

A business process model is useful because it “often shows the relationships between work steps and their sequence” (The Folio, 2003).

A hybrid of the process improvement method known as SUPER was used as a guide to evaluate and improve the current AF commodity council process model. SUPER (as presented by Lee et al., 2001) is an acronym that represents the five steps used to improve upon a process. These five steps are (Lee et al., 2001):

1. Select the process
2. Understand the process
3. Proceed with process measurement
4. Execute the process improvement
5. Review the improved process

Step 1 – Select the process. The process selected was the Air Force commodity council process.

Step 2 – Understand the process. This step was accomplished by studying industry literature presented on commodity councils, the guidance of the AFFARs, and any additional information which could be obtained about Air Force commodity councils. Chapter II provided a synopsis of this information. A comprehensive understanding was obtained about the commodity council concept and how the Air Force uses the concept to its advantage.

Step 3 – Proceed with process measurement. “The purpose of this phase is to define and measure the operation performance or value of the existing activities or tasks and sub-tasks in the processes, and ultimately illustrate the performance gaps through benchmarking with the predetermined goals of each activity/task or sub-task” (Lee et al.,

2001). To determine the quality of the existing Air Force commodity council process, each step had to be broken down and analyzed. To do this, the questions in Table 3.1, which integrate the industry survey data, industry documents, and applicable concepts collected from the literature review, were asked of every step. Steps that answered YES to question three were identified as candidates for modification, and were earmarked to be rebuilt with the applicable concepts incorporated in them.

Table 3.1 – Commodity Council Step Screening

Commodity Council Step Evaluation Worksheet				
#	QUESTION	YES?	NO?	ACTION
1	Is this step related to small business or supplier selection?			If YES, continue on to #2. If NO, end.
2	Does this step incorporate all of the benefits highlighted in the survey responses and lit review findings?			If YES, end. If NO, continue on to #3.
3	Are the differences between the Air Force process model and the data applicable to the needs of the Air Force?			If YES, improve the step based on the data. If NO, end.

Step 4 – Execute the process improvement. “This phase seeks to improve the problematic tasks performance to the level of desired states so that the output of the processes can accomplish the level required or expected by the customers” (Lee et al., 2001). At this point, it is necessary to restate that the decision to improve the current process was not made until after each step was analyzed. Chapter IV presents the results of the process improvement.

Step 5 – Review the improved process. “The purpose of this phase is to evaluate the improvement results and ensure whether the operation performance of the problematic processes have achieved the customer’s requirements and/or the desired state” (Lee et al., 2001). Chapter IV presents the results of the review.

METHODOLOGY DESIGN TESTS

The validity of using surveys to perform research has been questioned in the past. Weisberg et al. (1977) argues that this may occur because the underlying science of survey research is not completely understood by everyone, and therefore, not trusted. Weisberg argues that the key is to conduct the survey correctly—this point was incorporated throughout this research by considering all of the assertions made by Fink et al. (1983), Rossi et al. (1983), and Weisberg et al. (1977). Leedy et al. (2001), Leonard, (2004), and Yin (2003) offer four methodology tests designed to judge the quality and validity of the research design. The four tests are:

- **Construct Validity** – Defined as “the extent to which an instrument measures a characteristic that cannot be directly observed but must instead be inferred” (Leedy et al., 2001). “If there is no universal agreement on the measurement instrument, such as the consensus that a scale measures weight, the researcher must demonstrate that the instrument being used is valid for its purpose” (Leonard, 2004).
- **Internal Validity** – Defined as “the extent to which [a study’s] design and the data it yields allow the researcher to draw accurate conclusions about cause-and-effect and other relationships within the data” (Leedy et al., 2001). “Generically, this gives credence to the researcher’s conclusion that X causes Y” (Leonard, 2004).
- **External Validity** – Defined as “the extent to which [the study’s] results apply to situations beyond the study itself” (Leedy et al., 2001). Also defined as “the extent to which a finding applies (or can be generalized) to persons, objects, settings, or times other than those that were the subject of study” (GAO, 1990).
- **Reliability** – Defined as “the extent to which [a measurement instrument] yields consistent results when the characteristic being measured has not changed” (Leedy et al., 2001). The focus here is not on repeating the results of one survey by performing another survey. Rather, the focus of this test is repeating the same survey over again (Leonard, 2004).

Yin asserts that internal validity tests do not apply for exploratory studies. Therefore, as this thesis is an exploratory study, the internal validity test was not examined.

To judge construct validity, two steps must be covered. They are (quoted from Yin, 2003):

1. Select the specific types of changes that are to be studied (in relation to the original objectives of the study).
2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

For the purposes of this research, “specific types of changes” were corporate philosophies rather than actual changes. The philosophies chosen were those that focused on steps to incorporate small business into company procurement procedures, and supplier selection practices. These were chosen because they directly focus on the problem presented in the first chapter. The selected measures do indeed reflect the focus of this research because a major goal of a commodity council is the selection of a supplier. Additionally, understanding the methods used to incorporate small business in the supplier selection process will aide the government to do the same.

The quality of the external validity of this research is satisfactory because the results are applicable to other situations. The methodology can be used for any situation where quantitative data is not available, or no previous research has been performed. The results can be used as a guideline for improving a supplier selection process model for organizations where commodity councils are not used or no set protocol has been established.

The quality of the reliability of this research has been a major focus throughout. Great care was taken to document this research effort in a manner that would allow a later investigator to duplicate the study.

CHAPTER CONCLUSION

This chapter provided the null and alternative hypotheses of this research. Further, the data and data collection were explained, as was the questionnaire background. The concepts of triangulation and business process modeling were presented. Also, design tests were offered as a way of validating the methodology of this research.

IV. Analysis and Results

CHAPTER INTRODUCTION

This chapter presents the findings from the survey, review of industry and government documents, results of the literature review, and an analysis of the current Air Force commodity council process. The first half of this chapter presents the results of the qualitative study of industry commodity councils. Included in this section are the five themes that evolved from the survey responses, the reviewed industry documentation, and the reviewed literature of strategic purchasing/source selection materials. The second half covers the results from the assessment of the current Air Force commodity council process model and associated historical documentation. The screening tool was developed based on the information in the first half of this chapter.

SURVEY RESULTS

The ten companies surveyed presented 72 different behaviors/philosophies that were identified as part of their supplier rationalization and/or strategic sourcing. These 72 behaviors represent the segmented answers to the surveys provided by the industry firms. Appendix E presents all 72 behaviors/philosophies.

Five primary themes evolved from the survey data. First, cross-functional commodity councils are ongoing and demanding procurement processes that are instrumental in developing purchasing strategies and guiding supplier selection. Nine out of the ten firms surveyed had fully incorporated the use of commodity councils (or teams, committees, strategic sourcing, etc) into their procurement strategies. One person wrote

that “the role of [our] strategic sourcing initiative is to maximize value by maintaining world-class sourcing performance.” This person’s firm attributed the use of commodity councils with their ability to achieve this goal. Additionally, even though none of the survey questions inquired about company opinion with respect to using commodity councils, the responses addressed their importance. For instance, it was noted that the firms do not simply select suppliers on total cost, but rather use teams of experienced and educated professionals to evaluate their overall value. By doing so, the firms gain advantages through “cost reduction, quality improvement, cycle time reduction, and improved delivery capabilities to meet customer requirements” (Monczka et al., 2002).

The surveys also revealed that industry commodity councils demand a great deal of time and effort from their council members. For example, one of the firms surveyed presents every person on the committee with applicable background information about the potential suppliers. It is then up to the member to independently rate and rank the suppliers. The independent views are then compiled and discussed, with the best option being chosen by the group. Trent et al. (1994) asserts that additional effort is quite common in successful firms. The authors also add that “it is difficult to imagine an effective team that has not exerted an adequate effort on a meaningful and challenging assignment” (Trent et al., 1994).

Another detail which the surveys exposed was that for industry, commodity council participation does not end with the signing of a contract. Most firms extend the responsibilities of current members to train new committee members and develop current supplier relationships. One firm actually establishes commodity teams with the sole purpose of “fostering supplier relationships.”

A second theme presented by the data was that small businesses are indeed emphasized throughout industry purchasing goals and strategies. The majority of the firms surveyed view small business participation as a goal that must be satisfied. To emphasize their commitment to small business, some of the organizations set specific percentage goals which they closely adhere to, or place a minimum requirement on the number of small business suppliers to be included in each supplier decision. For example, one company listed as one of their primary corporate goals to contract 3-5% of their total procurement budget with small business suppliers (depending on the commodity). A small number of the firms surveyed utilize federal regulations and other federal programs related to small business participation as guidelines when developing purchasing strategies. One firm stated that their company policies include adherence to the DOD Pilot Mentor-Protégé program (a program designed to include and develop small business participation in government contracting) even though the firm is not part of the federal government.

The surveys pointed out that small suppliers are often evaluated differently than larger suppliers. Some of the firms that use supplier scorecards to reach decisions included a separate rating for those suppliers classified as small and disadvantaged. According to the responses, small firms are not evaluated the same as large firms because they do not have the same general characteristics. For example, one respondent wrote that “small businesses do not have the purchasing power to buy raw materials at best-in-class levels, and they [generally] do not have the equipment to be best-in-class [at high levels of output].” Evaluating firms with varying capabilities and expertise can result in an inaccurate evaluation. The surveys stated that while small business may yield to large

business in some areas of operations, there are other areas where they excel.

Accordingly, some firms responded that their commodity teams actively seek small business participation for their innovativeness and unique technology. One firm requires company engineers to regularly attend trade shows where emerging firms may be discovered.

Moore et al., (2002) asserts that the government is not the only organization concerned with including small business to satisfy socio-economic goals. Further, Moore writes that many firms “have discovered ways to reduce the number of suppliers they purchase from [supplier rationalization] while still providing opportunities for small business to benefit from these purchases.”

The third theme presented by the data was that industry views supplier selection as an in-depth process that considers many factors. For example, one firm listed 17 major areas where evaluations were conducted. A few examples included financials, process improvement, delivery and flexibility, customer satisfaction, and problem resolution.

A major component of supplier selection through the use of scorecards was a combined score which incorporated cost, performance, and quality. Cost, in this case, included factors that escalated the expense of an item to the firm. Time spent negotiating contracts had a cost, as did price per unit (obviously)—all factors were included in the calculations.

Supplier performance, while considered separate from cost, did contribute to final cost figures. On the other hand, performance was viewed as an independent, major component of corporate strategy. A supplier that offered a low price but performed poorly was viewed differently than a firm that performed well but at an increased cost.

The good performer could save procurement dollars in other areas of operations.

Conversely, a below-average performer was viewed as an additional risk to company success and, therefore, could result in extensive, unforeseeable expenses.

Quality, as with cost and performance, was viewed in a straightforward manner. Regardless if a product was offered at a low per unit cost and the supplier performed well, ultimately the quality of the product provided weighed heavily a company's evaluation.

Much of the literature reviewed for this thesis supported the survey results. Monczka et al. (2002) writes that "the overall objective of the supplier evaluation process is to reduce purchase risk and maximize overall value to the purchaser." Monczka, as well as many other authors, stress the importance of completely evaluating potential suppliers before any procurement dollars are spent because the purchase agreements can directly affect how a firm performs in the market.

The fourth theme which evolved from the survey responses was that industry firms develop and cultivate their supplier relationships to the benefit of both parties involved. Based on the survey responses, the majority of firms preferred to continue current supplier-buyer associations rather than start anew with each contract. For the most part, the companies viewed their supplier relationships as partnerships working towards a common goal of improved communication and a smoother process at a reduced cost for all parties.

The companies were willing to work closely with their suppliers to uncover process roadblocks and inefficiencies. Open and regular communication was a consistent requirement of the companies involved. This satisfied two requirements. First, it allows

the firms to keep up to date on the status of their business partners. Second, it allows the firms to track and rate supplier performance that can be used in future supplier-selection considerations. For two of the companies, performance ratings were communicated to the suppliers on a regular basis so improvements could be made. Also, current process discrepancies had to be addressed before any further agreements were considered.

The surveys also noted that some of the firms tended to avoid situations where they would be one of few, or the only, customer for a supplier due to the negative impact that might occur if the company decided to take their business elsewhere.

Many of the advantages of forming purchasing partnerships highlighted by Ellram (1991) were found in the survey responses. The common traits in the responses and from Ellram were (quoted from Ellram, 1991):

- Increased mutual dependence lowers risk of losing supply source and creates greater stability through increased supplier loyalty
- Reduced time looking for new suppliers/gathering competitive bids
- Allows for joint planning and information sharing based on mutual trust and benefit
- Greater cooperation from suppliers to support the firm's strategy
- May share business risks through
 - Joint investment
 - Joint research and development
 - Sharing of financial risks associated with market shifts

The literature review presented many examples that supported the survey responses. Consider Moore et al., (2002) who presents the process that John Deere goes through when developing a supplier. According to Moore, John Deere considers all new

suppliers as non-preferred until they can prove themselves. Suppliers who do not demonstrate potential and commitment are removed from the supplier base. On the other hand, the suppliers who excel are upgraded and considered approved suppliers. Table 4.1 summarizes John Deere's preferred classes of suppliers (as presented by Moore et al., 2002). Over time, the buyers/sellers accumulate experience which leads to trust and value. The firms then move from approved to key and eventually partner status.

Table 4.1 – John Deere's Continuum for Supplier Relations (Presented by Moore et al., 2002)

Relationship	Approved	Key	Partner	Shared mutual objectives
Supply base	<ul style="list-style-type: none">Multiple sources	<ul style="list-style-type: none">Targeted supply base	<ul style="list-style-type: none">Focused competition; single/ sole source for critical products	
Supplier attributes	<ul style="list-style-type: none">Meets minimum performance standardsAuthorized for current products	<ul style="list-style-type: none">Provides superior performanceProven ability to meet sourcing objectivesMutual commitment to long-term relationship	<ul style="list-style-type: none">Desire to be "best in class"Defined common objectivesIdentification of shared risk	
Sharing	<ul style="list-style-type: none">Limited information available	<ul style="list-style-type: none">Willing to share many types of information; i.e., cost, technology, resources	<ul style="list-style-type: none">Regular management meetingsJoint target costsAccess to financial data, technological information	
Cost management orientation	<ul style="list-style-type: none">Price analysis<ul style="list-style-type: none">Competitive quotationsHistoric price analysisMarket-based pricingPrice index analysisPrice modeling	<ul style="list-style-type: none">Cost analysis<ul style="list-style-type: none">Overhead allocation analysisCost breakdowns/cost disclosureCost driver analysisCost modelingIndustry cost analysis	<ul style="list-style-type: none">Target costing<ul style="list-style-type: none">Early supplier involvementTarget price analysisTarget cost analysisCompetitive assessments/ teardownsFinancial impact analysis	
Strategies for supplier relationships <ul style="list-style-type: none">Dedication to integrityConfidentiality of proprietary information				

The fifth and final theme, which evolved from the survey responses, was that accurate and appropriate data of every aspect of a supplier selection is necessary to make an informed decision. To the firms surveyed, data were vital to the ongoing success of the company's procurement strategies. For example, one respondent felt that ample data was necessary "to measure and monitor the performance of the sourcing initiative, including compliance to contracts, savings, and issues, [as well as] manage commodities and

contracts after implementation.” Another respondent wrote that “the request for quote initiation, records and selection criteria [must be] documented and records retained in accordance to each commodity need and life of the contract.”

The data were maintained on many different aspects of the company’s purchasing function (e.g., supplier evaluations, supplier performance, dollars spent, time spent, employee opinion, company financial data, etc). A central database was the chosen method of maintaining the information. This also has the added benefit of making the information available to other employees who may need access. The most popular method for maintaining information on each supplier was through the use of scorecards. One of the organizations surveyed had a company policy of maintaining a record on each and every major supplier they dealt with.

With regards to market analysis, studies focusing on spend data, market trends, and economic fluctuations were all listed as different types of data which were maintained for future use. Many of the firms found it useful to compare current analyses with older versions to ensure standardization and proper analysis techniques. For example, one firm provides their councils with a living database of metrics to be gathered and analyzed, past trends, and supplier breakdowns. From the survey responses, it was obvious that the firms favored the availability of more detailed information as superior to less information because it reduces the chances of confusion when performing the required tasks. To quote another respondent, the information is necessary “to demonstrate a clear understanding of the industry market segments, players, dynamics, and probable future trends within the full multifunctional team in order to generate and refine hypotheses to focus efforts, as well as assess potential options.”

In addition to the five general themes presented above, the survey data presented various concepts within strategic sourcing that the surveyed industry firms identified as key to the development of successful procurement strategies, and useful when addressing small business participation in company purchasing activities. The concepts were spend analysis, benchmarking, the documentation and analysis of market trends, supplier evaluation and selection, buyer leverage, and supplier development. These identified concepts aided the screening process, as well as the development of the suggested changes presented in Chapter V, and their influence can be seen throughout the proposed commodity council process that can be found in Appendix F. The concepts as described by the industry firms, are discussed further below.

Spend Analysis. Understanding where money has been spent, on what, and how often is important is identify positive and negative trends, discrepancies in an organization's process, and possible areas for savings. Proper spend analysis relies on ample data and a detailed process. Data should include, but is not limited to, justification behind the choice of a supplier, status of joint programs, problems with suppliers, problems with industry, current supplier performance, price trends over time, and results of quality audits. Spend data is used to build a legitimate supplier base. For the most part, each commodity team is responsible for performing spend analysis on their specific commodity.

Benchmarking. To the industry firms, continuously evaluating company policies and procedures against those of other reputable companies is a part of corporate philosophy. Performing the benchmarking correctly, as well as benchmarking the appropriate metrics and processes is important to the success of the concept. The firms have established process models that guide the procedure. Lessons learned from previous benchmarking attempts are incorporated into future attempts.

Documentation and Analysis of Market Trends. The analysis of market trends is necessary to build a legitimate supplier base. Firms gain an understanding of a commodity environment by understanding the applicable market trends. This concept is tied to benchmarking in that market trends often dictate which processes are considered for comparison. Interviews with experts are often performed for greater insight. A few areas of a market that are often understood and documented are industry size, industry utilization, technology changes, major trends, industry growth and contraction, market segmentation, and government regulations. Many resources are used to analyze market trends including trade and professional journals, and online educational and business databases.

Supplier Evaluation and Selection. Many different aspects of a company are evaluated before they are chosen as a supplier. These aspects include financial stability, capacity, consistency of a company's product, end-user's opinion of a supplier, price, delivery timeliness, and production procedures. Additionally, industry firms also evaluate potential suppliers on total benefit, flexibility, order accuracy, location of facilities, customer service performance, and quality assurance measures. Industry firms use commodity councils (or teams) to individually rate each supplier, determine what

business characteristics represent outstanding performance, and select suppliers.

Scorecards are often used to systematically document and evaluate suppliers. The scorecards are also used to maintain a record of supplier performance. Whether or not a firm is considered small or disadvantaged is often included in the evaluation process.

The industry firms presented a few conditions that should be met prior to the final selection of a supplier. Some of the firms felt that an extensive supplier search must be performed to ensure that as many eligible companies as possible have been included in the selection process. Also, many of the firms revisit the user's needs to verify that a certain supplier can meet those needs. When the low-cost supplier is not chosen, a few of the firms required written justification for the choice. The majority of the firms insist on testing a company's product before they are chosen as a supplier.

Supplier Development. Depending on the commodity in question, industry firms focus considerable energy on developing and cultivating supplier/buyer relationships. In addition to the details presented above (with respect to this topic), other practices were presented by the surveys. First, the industry commodity councils were often responsible for establishing the supplier relationships. Second, the commodity councils often designate goals for the suppliers to improve upon. Third, some firms required their purchasers to perform on-site visits of their regular suppliers to ensure compliance, and maintain open and continuous communication with the suppliers.

Buyer Leverage. The industry firms are dedicated to using their purchasing volume to their advantage. The companies consider commodity research, market analysis, lessons learned from previous contracts, supplier performance, SWOT (Strengths, Weaknesses, Opportunities, and Threats), and purchasing objectives when

establishing a desired level of cost savings. Industry commodity councils develop purchasing strategies and sign supplier agreements that realize the leverage that firm possesses. Power matrices are used to illustrate potential leverage for a given commodity. Figure 4.1 is an example of what one of the matrices might look like.

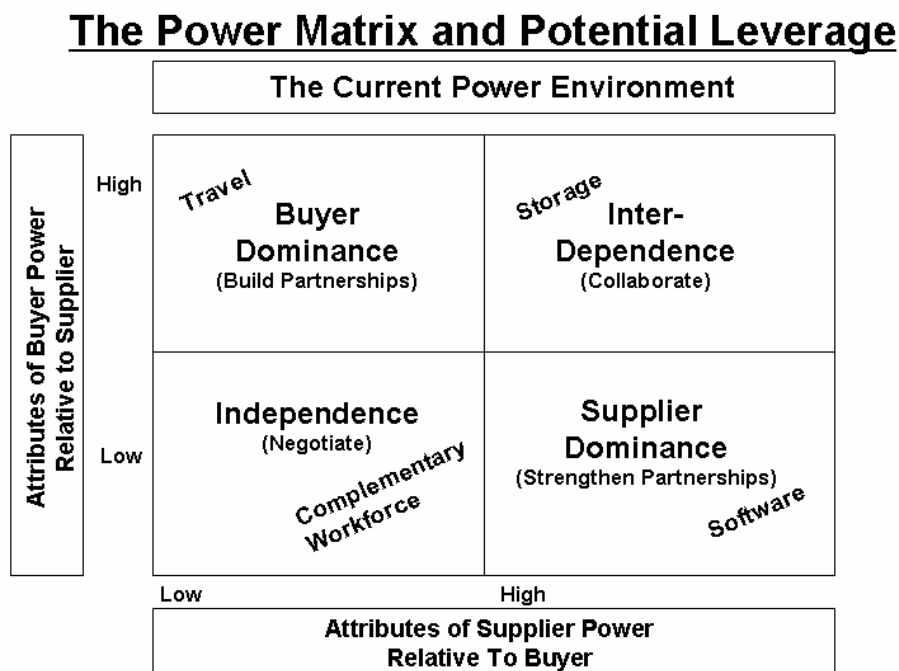


Figure 4.1 – Buyer/Supplier Power Matrix (IBM, 2004)

AIR FORCE COMMODITY COUNCIL PROCESS

Section six of the Air Force Federal Acquisition Regulation Supplement (AFFARS IG5307.104-93) provides the detailed instructions for the operations of an Air Force commodity council. There are 8 major sections with 56 subordinate steps listed and described in the regulation (see Appendix D).

The screening questions presented in the previous chapter highlighted 16 individual steps that (1) were directly related to small business and/or supplier selection; (2) varied from the industry practices identified in the survey and literature review; and (3)

contained differences that were applicable to the needs of the Air Force. The remaining 40 steps passed the screening test and were not considered for further study. A summary of the 16 steps, their associated discrepancies, and a comparison to the survey responses is below. For some of the steps, information from the literature review is provided.

Step Selection Overview

Three main themes characterize the differences identified between the current Air Force commodity council process, and the survey responses and literature review. The three are (1) industry has a better documented focus on small business, (2) additional clarification in the AFFARS instruction may be warranted, and (3) industry business practices may be used more positively.

Industry has a better documented focus on small business. Small business suppliers are mentioned sporadically throughout the regulation. Those sections (6.1.1.2, 6.1.6.5, 6.2.2, 6.2.7, and 6.4.3) include only short references to using small business suppliers. To be more effective, the research suggested that small business be evaluated separately from large business because of the inherent differences between the two classes. Further, to direct appropriate emphasis on the statutes and regulations guiding small business participation, adequate information should be incorporated into the executive summary of the AFFARS with the applicable requirements stated up front.

Additional clarification in the AFFARS instruction may be warranted. As noted above, many of the steps identified lack proper clarity on how a task or process is to be performed. For example, refer to section 6.3.1. The guidance suggests including an end-user on the commodity council, but the definition of a commodity council requires that

functional experts/end-users be a part of the committee. The guidance does not clarify whether or not this person is in addition to the current members or if the instruction is just being redundant, hence the confusion. For another example, consider section 6.1.2 of the AFFARS that addresses spend analysis. The description of spend analysis and suggested methods for performing the task are covered in just over a page, the majority of which describes the concept in general terms. In contrast, Moore et al. (2004) presents an in-depth description of the method, the inherent benefits and drawbacks, and suggested applications of the practice—the majority of which are absent from the regulation. The research showed that for the goals to be successfully accomplished, proper and clear direction must be given throughout the process. Lessons learned by the IT commodity council and Landing Gear commodity council note insufficient training/guidance as a problem that future commodity councils must address.

Industry business practices may be used more positively. As stated above, the business practices incorporated in the commodity council process require proper instruction for successful implementation to be achieved. By not including sufficient direction, it may be possible that council members are not maximizing the full potential of the practices, and as a result, wasting valuable time and effort. For example, the concept of benchmarking is extensive, but detailed information allows the user to scope down its focus when it is applied to a specific topic. The research highlighted a number of guidelines for using the integrated business practices that are omitted from the AFFARS.

Section 6.1 – Review Current Strategy

6.1.2 – Conduct Spend Analysis – As part of gaining an understanding of the current situation and strategy with respect to the particular commodity, the commodity council must gather and analyze where money has been spent in the past and with whom. To be complete, all subcategories of the commodity must be included. This topic is not only covered in section 6.1.2, but also Appendix A of AFFARS IG5307.104-93. The majority of the survey responses referred to spend analysis as an in-depth process, and offered more detailed instruction on approaching the practice in contrast to the limited information in the regulation. Ample published literature is available on the practice which is not present, referred to, or incorporated in the AFFARS. Lessons learned from previous Air Force commodity councils assert that this step is one of the most rigorous in the process (Heitkamp, 2004; Landing Gear Commodity Council, 2004). Both suggested improving the guidance and training related to conducting spend analysis. References to spend analysis were found in 9 out of 10 survey responses.

6.1.5 – Review Current Policy and Statutory Requirements – “Policy and statutory requirements should be considered early in the process in order to avoid unnecessary delays when developing a new strategy” (Department of the Air Force, AFFARS, 2004). A number of survey responses referred to reviewing current policy for compliance. Whether the review was focused on small business participation or cost savings depended on the type of review. The responses consistently directed purchasers to reference specific corporate policies to ensure agreement. The literature suggests thorough training as a way of ensuring compliance with all policies and statutes—this

point is not found in the current AFFARS. This step does not provide any direction on which policies, statutes, or regulations to cross-reference, to include the new DFARS guidelines. This concept was included in 6 out of 10 responses.

6.1.9 – Benchmark Existing Strategies – This step directs the council to evaluate the current process and identify potential areas for improvement. It also suggests including lessons learned as a part of the improvements. A few survey responses included processes to follow when benchmarking company practices. The directions included questions to answer and data to gather. This step presents very little information on performing benchmarking. Ample published literature is available on the practice which is not present, referred to, or incorporated in the AFFARS. Benchmarking was referred to in 4 out of 10 responses.

Section 6.2 – Evaluate and Assess Current Market

6.2.2 – Document Market Trends – The focus of this step is to understand the industry environment of the commodity in question. E.g., what are the economic cycles, what information on suppliers is available, what commodity forecasts exist, etc? The survey responses included more detail than was found in the AFFARS. This concept was included in 4 out of 10 responses.

6.2.3 – Analyze Market for Emerging Suppliers and Commodities – “Evaluate the market to determine what new suppliers and commodities are coming on the market in order to take advantage of potential benefits of new commodities and suppliers”

(Department of the Air Force, AFFARS, 2004). The survey responses included additional detail than was found in the AFFARS. This concept was included in 5 out of 10 responses.

6.2.5 – Analyze Suppliers’ Capacity and Capabilities – “Determine the volume of the commodity that can be delivered by individual suppliers. Review their manufacturing capabilities, performance capabilities, understand what they can do, etc.” (Department of the Air Force, AFFARS, 2004). The survey responses stated that the end-user/customer should be a part of this step. The regulation does not incorporate the end-user/customers views to the extent found in industry. This concept was included in 6 out of 10 responses. Survey responses aside, the literature offers ample criteria for evaluating suppliers that was not found in the guidance.

6.2.7 – Stratify Suppliers By Socio-Economic Status – This step directs the council to break-out the small and disadvantaged suppliers. The survey responses highlighted clear understanding of corporate goals and documentation as key components of this activity. This step does not set or even refer to minimum thresholds for small business participation. No documentation is required. Additionally, the regulation does not reference any regulations or statutes that are applicable to small business. This concept was included in 8 out of 10 responses.

6.2.9 – Evaluate Current Strategy Against Best Practices – “Identify best practices within the industry that produce increased efficiency and/or effectiveness in the current

market” (Department of the Air Force, AFFARS, 2004). The survey responses provided more information than was found in the AFFARS. Ample published literature is available on the practice that is not present, referred to, or incorporated in the AFFARS. This concept was included in 5 out of 10 responses.

Section 6.3 – Forecast Future Demands

6.3.1 – Collect Requirements Information From Stakeholders – The requirements collected from the major users are to be used to understand where the technology/requirements are going, and to aide in the development of strategies. The survey responses highlighted the importance of requiring end-user participation in all areas of the supplier selection process, whereas this step only suggests their input. The literature suggests that a characteristic of industry-leading firms is their ability to collect and monitor customer satisfaction and dissatisfaction. This concept was included in 10 out of 10 responses.

Section 6.4 – Create Future Strategy

6.4.3 – Develop Strategies For Meeting Specific Goals – Based on the information gathered to this point, initial strategies are developed. These may include “uniformity of acquisition, enhance savings, increase quality and/or efficiency” (Department of the Air Force, AFFARS, 2004). The survey responses referred to evaluating small and disadvantaged suppliers differently than large suppliers. This may occur through adjustments to supplier scorecards or through separate consideration all

together. This step directs the development of one strategy, combining small and large suppliers. The concept was included in 6 out of 10 responses.

6.4.5 – Obtain Approved Supplier Recommendations – “Coordinate with industry consultant and leaders to obtain recommendations for strategic goals and continuous improvement. Recommendations are based on the goals of the CAMP as well as the gap analysis, the demand forecast, and the market analysis” (Department of the Air Force, AFFARS, 2004). As with 6.3.1, the survey responses highlighted the importance of requiring end-user participation in all areas of the supplier selection process, whereas this step only suggests their input. This concept was included in 10 out of 10 responses.

Section 6.5 – Approve Strategy

No issues were noted.

Section 6.6 – Establish Contractual Instruments

6.6.1 – Issue Requests For Proposals (RFPs) – “RFPs are used in negotiated acquisitions to communicate Government requirements to prospective contractors and to solicit proposals” (Department of the Air Force, AFFARS, 2004). The survey responses revealed that a few of the companies that evaluate small and disadvantaged businesses separately from large business, also issue separate RFPs (one or more to the selected large supplier(s) and one or more to the selected small supplier(s)). This step incorporates both classes into one. This concept was included in 3 out of 10 responses.

6.6.3 – Negotiate With Suppliers – “Taking into consideration the advisory recommendations, reports of contributing specialists, and the current status of the contractor’s purchasing system, the contracting officer is responsible for exercising the requisite judgment needed to reach a negotiated settlement with the offeror and is solely responsible for the final price agreement” (Department of the Air Force, AFFARS, 2004). The survey responses highlighted the importance of entering contract negotiations with all of information possible. Further, the surveys offered additional direction than was found in the AFFARS. Ample published literature is available on the practice that is not present, referred to, or incorporated in the AFFARS. One piece of literature suggested incorporating small business as mandatory sub-contractors if the main contractor selected was classified as large business. This concept was included in 9 out 10 responses.

6.6.4 – Select Suppliers – The regulation directs the contracting officer to make the supplier decision, and select a supplier that is responsible, and offers the goods and/or service at “a fair and reasonable price” (Department of the Air Force, AFFARS, 2004). The survey responses revealed that the majority of those companies who incorporate small business into their procurement strategies also provide additional guidance for their contracting officers when the process gets to this point. The regulation, on the other hand, offers no additional relevant information than is presented above. This concept is included in 5 out of 10 responses.

Section 6.7 – Roll Out Strategy

6.7.1 – Communicate Implementation Strategy To Stakeholders – “This may include a definition of the requirements, an identification of key suppliers, how contracts may be negotiated and developed, and how suppliers may be managed” (Department of the Air Force, AFFARS, 2004). The survey responses revealed that the majority of the firms questioned put much emphasis on developing their supplier relationships. Previous research suggests that industry-leaders strive to develop their supplier relations. While this step mentions managing suppliers, it does not give any guidance or direction on cultivating the link between buyer and seller. This concept is included in 10 out of 10 responses.

6.7.4 – Transition From Previous Suppliers – “Establish new supplier and phase out previous supplier in accordance with the CAMP” (Department of the Air Force, AFFARS, 2004). As with 6.7.1, the survey responses refer to developing supplier relationships. This step only provides a brief description of what to consider when choosing a new supplier. It does not offer the possibility of continuing business, nor does it direct steps to take to develop the new supplier if one is actually chosen. This concept is included in 10 out of 10 responses.

Section 6.8 – Monitor and Continuously Improve Strategy

No issues were noted.

HYPOTHESIS REVISITED

The literature and data paint an interesting picture of the Air Force's commodity council process. It appears that the methods and practices that industry firms follow to incorporate small business into their procurement strategies differ from those of the Air Force. Also, the Air Force commodity council process makes no mention of the regulations and laws that control DOD procurement. Additionally, it appears that manner in which the Air Force performs benchmarking, purchasing and supply management, spend analysis, and the consolidation of contracts is deficient when evaluated against the manner which industry firms apply the practices, and the statutes and regulations that govern Air Force procurement. Thus, it seems reasonable to reject the null hypothesis and suggest improvements to the current commodity council process.

CHAPTER CONCLUSION

By following the methodology from Chapter III, the surveys from industry firms have been summarized and the Air Force commodity council process has been evaluated. Differences have been identified and the applicable areas for improvement have been listed.

V. Recommendations, Limitations, and Conclusions

CHAPTER INTRODUCTION

This chapter uses the information obtained from the previous chapters to offer answers to the original research questions presented in Chapter I that guided the research effort. An improved Air Force commodity council process is presented, followed by the limitations of the research and the recommendations for possible future research endeavors. This chapter ends with the research conclusion.

THE RESEARCH QUESTIONS

The research questions presented in the opening chapter were:

1. What commodity council processes does industry incorporate to address small business utilization in contracting?
 - a. What lessons can be learned from industry?
2. What commodity council processes does the federal government (and in particular the Air Force) incorporate to address small business considerations in government contracting?
 - a. Can the federal government enhance their current commodity council process with respect to addressing small business participation in contracting, using lessons learned through industry commodity council processes and relevant literature and regulations?

The information found in Chapters II, III, and IV provides the answers to these questions.

Based on the results of the previous chapter, it appears that Air Force commodity councils need to better incorporate small business in their acquisition strategies for two reasons. First, federal regulations and public law dictate that certain criteria be incorporated into DOD acquisition strategies, and this information is missing from the

current process. Second, the Air Force commodity council process differs from industry practice in the manner in which small business is incorporated into organizational acquisition strategies.

In general, industry commodity councils incorporate small business in their acquisition strategies in by:

- Establishing executive-approved corporate goals
- Evaluating small business separately or by incorporating a small business indicator into supplier scorecards
- Ensuring corporate-goal compliance prior to finalizing

To the companies surveyed, including small business suppliers was a serious matter that required serious attention. By establishing goals and participation levels at the executive level, it illustrates company and leadership commitment that trickles down to the individuals making the supplier selections.

Evaluating a large supplier against a smaller supplier can present some difficulties. One individual from the survey offered his experience with acquiring IT equipment for company use. When this person began researching possible IT solutions, he quickly learned that quality larger suppliers were easily located and responded quickly with estimates. The quality smaller suppliers, on the other hand, were not as easy to locate for a number of reasons (lack of name recognition, no advertising, limited representation in major trade journals, etc.). This person went on to explain that once the smaller firms were contacted, an issue that had to be considered was their ability to satisfy the customer's needs in a timely fashion, without any degradation of company performance (with respect to other customers). The additional considerations slowed down the

supplier-selection process. After this situation arose a few times, it was decided to determine the level of small business participation first, and then evaluate the small suppliers separately. This allowed the council to compare large suppliers to other large suppliers, and small suppliers to other small suppliers. By breaking the evaluations up, it also allowed the committee decision to incorporate all suppliers, as opposed to unfairly eliminating certain firms because non-procurement goals were not considered.

For those firms that utilized a supplier scorecard, a common practice was to include small business designator which was incorporated into a company's final evaluation score. This designator was designed to off-set the benefits that large suppliers could get, and which small suppliers could not (such as greater exposure and greater capacity).

Finally, industry councils check and re-check their proposed strategies and selections before any contracts are signed. This is intuitive given that industry firms exist to make a profit (among other things).

Based on the information presented thus far, the following improvements should be made to the current Air Force commodity council process:

1. Emphasize the importance of incorporating small business at the beginning of council deliberations. This prevents a spiral from working on a purchasing strategy that ignores small business and then must be redesigned.
2. Redesign the process model to evaluate small suppliers separately from large suppliers. Compare apples to apples. Take the consideration of non-procurement goals out of the decision and build it into the process.
3. Clarify all instructions. Clear instructions will help to prevent confusion.
4. Provide ample direction on the use of the best-practices in the supplier selection. The information is available; it only needs to be incorporated into the regulation.

In support of these suggestions, two products were developed. The first product was a modified Air Force commodity council process guidebook. This new guidebook has been incorporated with information gathered from the qualitative research, as well as the process model analysis. Each of the 16 steps identified through the process model screening has been updated to reflect the findings of this thesis. A summary of the suggested changes is presented below. For the complete improved Air Force commodity council process operating instruction, see Appendix F.

The second product is a modified Air Force commodity council process model (Figure 5.1). Although similar to the previous model in many ways, the modified process model incorporates industry's practice of evaluating small suppliers against other small suppliers, and large suppliers against other large suppliers.

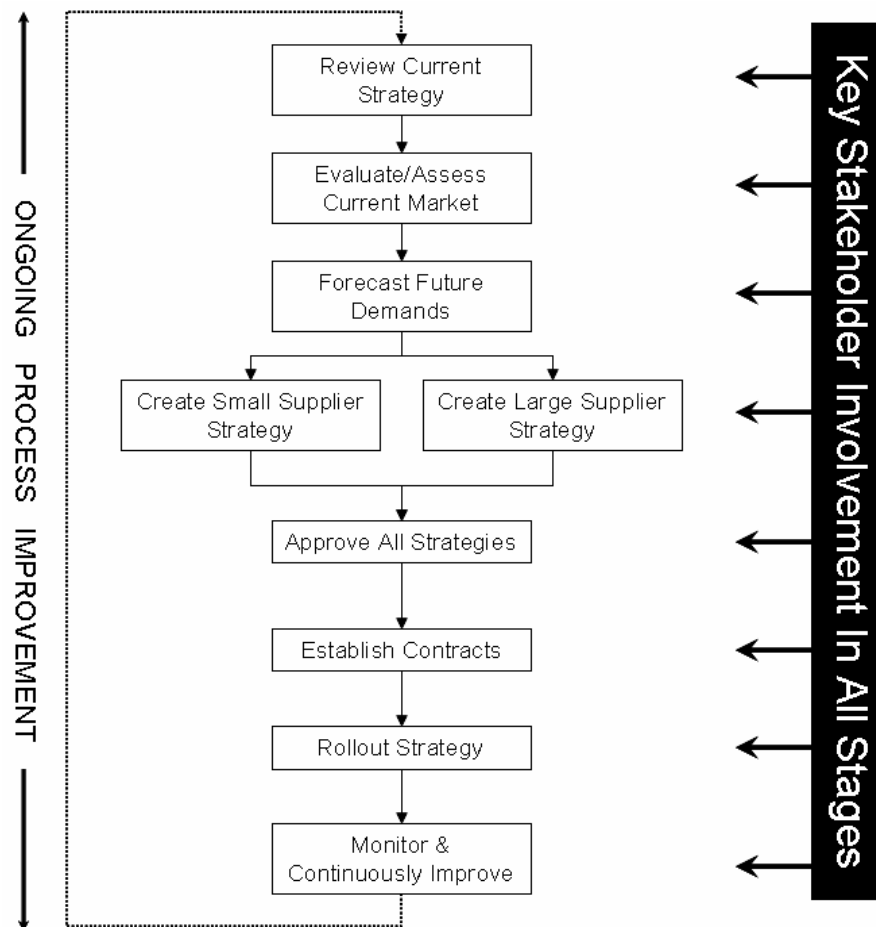


Figure 5.1 – New Air Force Commodity Council Process Model

In addition to the two modifications described above, an important change that is recommended is the incorporation of information about satisfying non-procurement goals in the executive summary of IG 5307.104-93. This suggestion is based on the fact that the surveys noted the importance of clearly establishing goals for including small business into corporate procurement strategies. Many of the industry firms believed that setting the tone at the beginning of the supplier selection process was beneficial.

Keeping the findings in mind, the following paragraph should be added.

Commodity council members should focus on satisfying procurement AND non-procurement goals (procurement goals consist of cutting processing/delivery

times, lowering costs, managing suppliers, etc; non-procurement goals consider social, economic, environmental, and international-relation goals). A main component of non-procurement goals are small and disadvantaged businesses. Federal regulations direct the inclusion of small and disadvantaged businesses in government procurement strategies. The Small Business Reauthorization Act of 1997 and recent changes to the Defense Federal Acquisition Regulation Supplement (Change Notice 20040917) established guidelines which should be incorporated into the strategies of the commodity council. The contributions which small business make to the economy, the workforce, and the development of technology should be given consideration throughout the selection process.

Section 6.1.2 – In a report by the GAO (2003), the authors found that the government is far from conducting spend analysis properly. Given that a major finding of the report was that successful firms utilize a central database that compiles the financial data automatically, it is reasonable to assert that adding further detail will do little to aide the situation. Nevertheless, general points were included to further direct researchers until the day comes where a single, central database is available.

Section 6.1.5 – Further guidance about regulation requirements was added, as was direction to seek training from all available sources on the matter.

Section 6.1.9 – Industry best-practices regarding benchmarking were added.

Section 6.2.2 – Additional clarification was added.

Section 6.2.3 – Expanded the scope to include small business.

Section 6.2.5 – Redesigned this step to include reviewed literature on evaluating suppliers based on established criteria.

Section 6.2.7 – Originally, this step was the only one that directed serious consideration toward small business. It was expanded to include the level of participation by small business on previous contracts, as well as setting the level of anticipated/required small business participation in the current commodity spiral.

Section 6.2.9 – Additional clarification and direction was added.

Section 6.3.1 – Reworded to direct the incorporation of end-users/functional experts as part of the council. Also, included direction on which customer inputs to collect and consider.

All of Section 6.4 – The entire section was duplicated and inserted as section 6.5. The new 6.4 addresses the creation of a small supplier strategy. The new 6.5 addresses the creation of a large supplier strategy. Although one section follows the other, they are meant to be completed simultaneously—they are only arranged in this manner for flow. The majority of the steps are verbatim copies of each other. The only difference is one focuses on satisfying the small business requirement, and the other does not.

Section 6.7.1 (formerly 6.6.1) – This section was broken into two parts: one focusing on small and disadvantaged suppliers, and the other on large suppliers.

Section 6.7.3 (formerly 6.6.3) – Additional direction was added.

Section 6.7.4 (formerly 6.6.4) – Additional direction was added.

Section 6.8.1 (formerly 6.7.1) – Additional direction was added.

Section 6.8.4 (formerly 6.7.4) – Guidance for supplier-buyer development was added.

Selection Criteria

Although the industry firms mentioned supplier-selection criteria, no specifics were asked for or gathered. Further, the current Air Force commodity council guidance does not present criteria for selecting a supplier. The literature review, on the other hand, presented a few areas for consideration that may be useful to commodity councils. These

concepts are presented below, and they have also been incorporated into section 6.2.5 of IG5307.104-93 (Appendix F).

Monczka et al. (2002) presents the following list of key supplier evaluation criteria (quoted from Monczka et al.):

Supplier management capability. It is important to understand the capabilities of the management of a supplier. Asking pertinent questions regarding management may provide some valuable insight into the attractiveness of a company. Some questions that may be asked are:

- Does executive management practice long-range planning?
- Has management committed itself to total quality management and continuous improvement?
- Is there a high degree of turnover among managers?
- What is the professional experience of the managers?
- Is there a vision about the future direction of the company?
- How many purchasing professionals are certified purchasing managers?

Overall personnel capabilities. This refers to non-management personnel. A company should have a highly-trained and consistent pool of employees. Some major points that may be evaluated are:

- The degree to which employees support and are committed to quality and continuous improvement
- The overall skills and abilities of the workforce
- The state of employee-management relations
- Workforce flexibility
- Employee morale

- Workforce turnover
- The opportunity and willingness of employees to contribute to improving a supplier's operation

Cost structure. This component requires a complete understanding of the various costs that a particular supplier has. These might include direct and indirect labor, material costs, and general overhead costs. This area of analysis may be difficult to complete thoroughly because suppliers may have accounting systems that do not allow for proper evaluation, or the company in question might view the information as proprietary.

Total quality performance, systems, and philosophy. This component not only addresses such areas as management commitment, statistical process control, and number of defects, but it also includes safety training, and facilities and equipment maintenance.

Process and technological capability, including the supplier's design capability. Process consists of the technology, design, methods, and equipment used to manufacture a product or deliver a service. The production process that a supplier uses affects the required technology that they must have, the skills that their employees must have, and type and complexity of the equipment they must use. The evaluation of a supplier's process should result in an understanding of future company processes, the technical aspirations of the supplier, and the estimated resources that will be required to accomplish their goals.

Environmental regulations compliance. The government has implemented strict regulations regarding pollution. In general, purchasers do not want to be associated with violators of the applicable laws. Some possible areas for evaluation are:

- Public disclosure of environmental record
- Hazardous waste management
- Toxic waste pollution management
- Environmentally friendly product packaging

Financial capability and stability. This area of evaluation is of utmost importance as a company who is not financially stable is a major risk. A supplier with low financial stability may go out of business, they may not have the resources to complete an order, or they may become too financially dependant on the purchaser (that may have dramatic effects if they are not selected by the buyer when the contract is renewed). Many resources are available to evaluate companies who are publicly owned. Some websites that may provide useful information are:

- Yahoo! Financial (www.biz.yahoo.com)
- Morningstar (www.morningstar.net)
- Marketwatch (www.marketwatch.com)
- 411 Stocks (www.411stocks.com)
- The Street (www.thestreet.com)
- Dun and Bradstreet (www.dnb.com)
- Hoover's (www.hoovers.com)

Production scheduling and control systems, including supplier delivery performance. This area includes those systems that release, schedule, and control a supplier's selection process. Some questions that may be asked are:

- Does the supplier use a material requirements planning system to ensure the availability of required components?

- Does the supplier track material and production cycle time and compare this against a performance objective or standard?
- Does the supplier's production scheduling system support a purchaser's just-in-time requirements?

Information systems capability. Electronic communication is vital to day-to-day operations. Web-based platforms may increase turnaround time on orders and improve customer satisfaction. Also, they allow for 24-hour operations (if the supplier does not have a representative on call all of the time). A supplier should be evaluated on their current capability, their company philosophy on implementing business to business e-solutions, and their expectations for the use of technology in the future.

Supplier purchasing strategies, policies, and techniques. This area is key to integrated supply chain management. This information may be obtained directly from the supplier in question, or from other firms who have business relationships with the company. Integrated systems may improve planning and forecasting, reduce order lead-time, reduce in-transit inventory, and reduce costs.

Longer-Term Relationship Potential. Although the survey responses did not include specific supplier selection criteria, they did mention the usefulness of pursuing a supplier/buyer relationship long-term. This area evaluates a supplier's willingness and ability to develop long-term relationships with suppliers. Some questions that may be asked to understand company views on supplier development are:

- Has the supplier indicated a willingness or commitment to a longer-term or partnering arrangement?
- Is the supplier willing to commit resources that it cannot or will not use in other relationships?
- How early in the product design stage is the supplier willing or able to participate?

- What does the supplier bring to the relationship that is unique?
- Does the supplier have a genuine interest in joint problem solving?
- How much future planning is the supplier willing to share?
- Will the supplier share cost data?
- Is the supplier willing to come to us first with innovations?

Chao et al. (1993) presents ten areas for evaluation; five subjective and five objective.

The five objective criterion are (1) the percentage of orders which arrive on-time, (2) the number of order mistakes that a supplier makes, (3) the percentage of produced items which meet quality specifications, (4) the actual cost compared to the initial target cost, and (5) the average time that a supplier takes to receive an order and send out the shipment. The five subjective criteria are (1) professionalism, (2) negotiating ability, (3) commodity knowledge, (4) cultivating qualified suppliers, and (5) how well the supplier teams with the buyer.

RESEARCH RELEVANCE AND BENEFITS

This research was conducted to evaluate a current Air Force process. The research is relevant because the recommendations stated above should be used to improve upon the current process so that it is as efficient as it needs to be. Further, the research is utilitarian. It provides informed guidance based on published research literature and the practices and philosophies of successful industry firms. The process was methodically evaluated and enhanced, taking into consideration the research findings.

This research also has implications for other services across the Department of Defense. First, it presents a method to improve other commodity council and/or supplier selection processes. Secondly, it shows that any process, even those that do not lend themselves well to common evaluation techniques, can be assessed and enhanced by following an academically-supported research construct.

LIMITATIONS OF THE RESEARCH

The unique role of the government presented challenges in this thesis given that the data were obtained from industry firms and publications. Industry firms are not bound by the same laws and regulations as government organizations, which makes attempting to apply industry practices to government processes interesting. Also, given that industry firms are in business to make a profit, many of their strategies are considered proprietary and could not be obtained due to financial constraints.

A minor limitation to this thesis lies in the methodology employed. A literature review on business practices could conceivably never end. To address this limitation, the process was repeatedly evaluated after each improvement was made to ensure that a complete process (complete as could be) was developed. Literature was studied to the point where a comprehensive picture of the concept in question could be established.

Another limitation was the number of survey participants. More participants would have been beneficial, although this assertion is not guaranteed. Most survey texts state that for anonymous surveys, a minimum of 30 participants is desired. For surveys using expert opinion, that number can drop to 10 or even less. Using an additional 10 participants would not have reduced the validity of the results, but rather improved them.

An additional limitation of this thesis was the relative-newness of the concept being addressed. True, commodity councils have been in existence in industry for some time. However, their use in DOD activities is comparatively recent. As a result, many of the automated and linked systems that industry firms use to reach procurement decisions are not available to the Air Force. This problem can only be addressed over time.

POTENTIALLY BENEFICIAL ADDITIONAL RESEARCH TOPICS

This thesis sets the groundwork for many future research topics, including:

Perform a commodity council program evaluation through an analysis of implemented processes and interviews with commodity council participants. As the Air Force commodity council process continues to develop, additional data will become available which will allow in-depth evaluations to be conducted. The evaluations could determine what effects, if any, recommended changes (like those presented here) have on commodity council performance. Interviews with council participants may provide some much-needed insight into the supplier rationalization process—who is considered, who is not, why, to what extent, and so on.

Is the level of small business participation required by legislation too high, too low, or just right? Some studies have shown that the reforms made by the DOD have fallen way short of helping small and disadvantaged businesses survive. Others have shown the opposite. Understanding the true environment should be useful to those who make policy.

How effective are commodity councils within government application? Research has proven their worth in industry, but how about within the DOD? Are we wasting our time and effort, or is this a concept which should be developed and optimized?

How effective were the process improvements suggested by this thesis to enhancing small business participation in Air Force procurement strategies? What additional changes/enhancements should be made?

What changes to the DOD procurement systems are necessary to allow good spend analysis? GAO (2003) stated that the government is years away from performing spend analysis correctly—what changes are needed?

How can the government make contract bundling decisions without negatively affecting small and disadvantaged businesses? The SBA asserts that contract bundling is bad for small and disadvantaged business. The literature states that the concept is a best-practice that should be used. Where is the median and how does the DOD achieve it?

How does industry value supplier past performance in comparison to how the Air Force values past performance? What are the differences of the two philosophies? How do they affect the final decision?

Can small business use the concept of contract bundling to their advantage? Is it possible for a few small businesses to combine their efforts and resources to challenge large businesses for larger-value contracts?

What is the impact on the number of small businesses by the use of the commodity council process? Does the use of commodity councils reduce the number of small businesses in the government's supplier base?

RESEARCH CONCLUSION

This research has compared the Air Force commodity council process against survey responses from industry firms and published literature on industry procurement business practices. A triangulation methodology was employed to determine that the current Air Force commodity council process required improvement to efficiently incorporate both procurement and non-procurement goals. Based on the survey data and the literature review, a new commodity council process model (and associated operating instruction) was proposed.

Appendix A: All Databases Searched and Criteria Used

DATABASES	
AIAA Technical Meeting Papers*	Inform's Annual Comprehensive Index
ABVINFOFORM via ProQuest	InfoTrac Custom Military and Intelligence Database, via Gale
AFIT Multi-Database Search	InfoTrac OneFile, via Gale
Academic ASAP, Expanded via Gale	Ingenta
Aerospace & High Technology Database via Cambridge	Interdok - MInd: the Meetings Index
Aerospace Professional Papers Database	INSPEC via EBSCO
Air Force Publications	International Abstracts in Operations Research
Air University Library Index to Military Periodicals	ISI HighlyCited.com
ArticlesFirst via FirstSearch	Jane's Military Biographies
Business and Company Profiles via Gale	Knovel Books
Cambridge Scientific Abstracts	Lecture Notes in Computer Science
Catalog of US Government Publications (MOCAT)	Materials Research Society (MRS) Symposia
Cite Seer (NEC Research Index)	MatWeb: Material Property Data
Compendex via Engineering Village2	Meteorological and Geostrophysical Abstracts via Cambridge
Computer Abstracts International Database via Emerald Abstracts	Military Information: Where to Find?
CompuScience WWW Database	Multi-Database Search
COS Funding Opportunities	NASA Tech Reports
Congressional Research Reports	NATO-PCO/AGARD on CD-ROM
Country Watch	National Technical Information Service (NTIS)
Digital Bibliography and Library Project (DBLP)	Navy Hazardous Materials Control & Mgmt. on CD-ROM
Decision Sciences Web	Newsbank's InfoWeb
Delphion Intellectual Property Network	NIST Scientific and Technical Databases
DOE Information Bridge	PapersFirst via FirstSearch
DTIC (STINET) MultiSearch	Proceedings of the National Academy of Sciences (PNAS)
DTIC Private (STINET)	PubMed
DTIC Public (STINET)	Rand Reports
DTIC on CD-ROM	RefWorks
EBSCO Host Databases	SCAMPI, Staff College Automated Military Periodicals Index
EDGAR, SEC database	SciCentral
Energy Citations Database	Science Citation Index Expanded™
Environmental Universe	ScienceDirect
Engineering e-journal Search Engine	ScienceServer@LANL*
EPA Publications Search	Scientific and Technical Aerospace Reports (STAR)
Educational Resources Information Center (ERIC)	Sciurus Search Engine
Find Articles	Searchable Physics Information Notices (SPIN)
FirstSearch Databases	STINET MultiSearch
Flashpoint Databases*	Transportation Research Board (TRIS)
Foreign Broadcast Information Service	UMIs Current Research
GAO Reports & Testimony	UMIs Dissertation Services
General Reference Center via Gale	U.S. Government Periodicals
GrayLIT Network	U.S. Patent and Trademark Office
Highwire: Library of the Sciences & Medicine	U.S. Securities and Exchange Commission, EDGAR database

Search Criteria

- | | |
|----------------------------------------------------------|--------------------------------------------|
| - Commodity Councils | - Air Force Commodity Councils |
| - Commodity Council Performance | - Evaluating Commodity Council Performance |
| - Air Force Acquisition Strategies | - Small Business Supplier Rationalization |
| - Supplier Evaluation | - Small Business Supplier Evaluation |
| - Government Procurement Strategy Evaluation | |
| - Small Business Participation in Government Procurement | |

Appendix B: Public Procurement Process Improvement Initiatives and Regulations

- Packard Initiatives (1969)
- Blue Ribbon Defense Panel (Fitzhugh Commission) (1971)
- DODD 5000.1 (Major System Acquisitions); Commission on Government Procurement (1972)
- DODD 5000.4 (CAIG); DODD 5000.3 (T&E) (1973)
- DODI 5000.2 (Major System Acquisitions); DODD 5000.28 (DTC) (1975)
- OMB Circular A-109 (1976)
- Defense Science Board Acquisition Cycle Task Force (1978)
- Defense Resource Management Study (1979)
- Carlucci Initiatives; Defense Acquisition Improvement Program (1981)
- Nunn-McCurdy (thresholds) (1982)
- Grace Commission (1983)
- DOD 5000.43 (streamlining) (1985)
- Packard Commission (1986)
- DODD 5134.1 (USD(A); DODD 5000.49 (DAB) (1987)
- Defense Management Review (1989)
- Revised DODI 5000.2 (Major System Acquisitions) (1991)
- Federal Acquisition Streamlining Act (FASA) (1994)
- Federal Acquisition Improvement Act (FASA II) (1995)

Appendix C: Benchmarking Resources Utilized By IBM (IBM, 2004)

Advertising Age Salary Trends - US	Institute National Estadisca - Spain
American Express - Global	Intel Salary Survey - Ireland
Anklesaria Group	iSuppli - Global
APOGEE Survey - France	Kennedy Info Research Group
ASTD Industry State Report	Mercury Research
British Partners Associates	Oberthur Survey - France/Belgium
Building Maintenance Information - UK	Ogilvy & Mather - Global
Bureau of Labor Statistics - US & Canada	Pinkertons & Burns Survey - Canada
Business & Trade Journals, Magazines	Price Waterhouse Survey - LA
Carlson Wagonlit Travel - Global	Producer Price Index - US & Canada
Consultant Data and Surveys	Producer Price Index - US & Canada
DeBreed & Partners Survey - Netherlands	Research Companies
DeDios - Global	SEDISI Survey - Spain
Distributor Comparative Cost Data	Stanford Resources & Display Search - Global
Dutch Government Labor Index - Netherlands	State Contracts
Economic Research Institute - US	Statistische Bundesant – Germany
Electronic Information Report	Supplier Input - varies
Energy Information Administration - US	Supplier Input and Surveys
Eurosta - Germany	Survey of Corporate Relocation Policies
Executive Industry Report	SWICO Survey - Switzerland
Fujiwara Rothchild - Global	The Economist - UK
Group 4/Country Government Publication - Belgium	Trend Focus - Global
Hes nec Information Systems, Ltd. - Israel	TSR - Global
Hollway Report - UK	UK Office of National Statistics - UK
INE & AERCE - Spain	Vigilancia/Convenio Trade Agreement - Spain
INSEE Labor Index - France	Websites - Salary.com, Monster.com, IDC
INSITE Survey - Italy	

Appendix D: Original Air Force Commodity Council Process (AFFARS IG5307.104-93)

6.1 Review Current Strategy

6.1.1 Develop communication and implementation plans

6.1.1.1 Continue to refine the council Communication Plan, based on the template provided. The Communication Plan identifies all relevant stakeholders, what communication messages apply to each stakeholder group, what communication methods may be used for each message to each group as well as a schedule for the messages to be distributed. In addition, a feedback mechanism may be established to collect and evaluate data from stakeholders.

6.1.1.2 Coordinate with the Deputy Assistant Secretary of the Air Force (Contracting). This helps to ensure that lessons learned and best practices from other councils are collectively shared across the enterprise. SAF/AQC also plays a large role in helping the council manage risks within their strategy without overlooking statutory regulations, designated policy, or socio-economic goals.

6.1.1.3 Coordinate with MAJCOMs, DRUs, and FOAs. The council needs enterprise buy-in at every step of the process. The level of buy-in increases council momentum while decreasing obstacles, thus making future steps in the process more efficient.

6.1.1.4 Begin to document action items and schedule constraints that may affect the implementation of the future strategy. Examples include policies that need to be written or revised, processes that need to be reengineered, and system requirements that need to be defined. Working groups may need to be formed to address specific action items as warranted.

6.1.2 Conduct spend analysis

6.1.2.1 Review spend analysis specific to the commodity group. The spend analysis reflects how much money was spent, who spent the money, where the commodities are being used, the number of actions each base/installation made in conjunction with a commodity, and who the major suppliers are.

6.1.2.2 Identify any potential subcategories. Each commodity category may have subcategories. Identify the possible sub-categories and determine which ones may be incorporated into the strategy.

- 6.1.2.3** Gather additional spend data as required. The data provides factual and relevant information as to the specific commodity's historical information, commercial and governmental uses, acquisition processes, and other information about the commodity as deemed relevant. This can include, but is not limited to, DD350 and DD1057 data, Government Purchase Card (GPC) spend data, and commercial processes based on end-to-end procurement (order receipt to commodity delivery and ultimate payment). This data could also include government-buy cycles for the commodity, command practices, contingency processes, and operational commodity practices. Determine the time span of pertinent historical information. The time frame determined by the council provides enough baseline data to develop and pursue council goals and objectives.
- 6.1.3** Identify stakeholders. Include stakeholders from all areas affected by council decisions. This includes, but is not limited to, contracting, finance, engineering, supply, transportation, and program management personnel. All stakeholders should be present throughout the formation and use of the CAMP. For example, key stakeholders for a Fuels commodity council might include transportation, maintenance, operations, contracting and finance/budget personnel. Peripheral stakeholders may include personnel from the safety office, HAZMAT office, base operations, Civil Engineering, etc.
- 6.1.4** Identify current initiatives/contracts. Review other DoD and federal agency activities to see if the same type of effort has been performed elsewhere. This may result in some quick wins early in the process and eliminate duplication of efforts.
- 6.1.5** Review current policy and statutory requirements. Policy and statutory requirements should be considered early in the process in order to avoid unnecessary delays when developing a new strategy.
- 6.1.6** Document current processes
- 6.1.6.1** Processes to be detailed include: user/customer requirements, acquisition processes, supply steps, transportation functions, vendor functions, and contingency processes.
 - 6.1.6.2** Document current cost of the commodity from inception through disposal (life-cycle cost). Costs associated with the commodity may include:
 - Price of item

- Air Force labor hours required from the original request through disposal
- Internal maintenance and upkeep costs
- Warranty costs
- Normal transportation cost associated with the commodity
- Disposal cost, including any special environmental handling and disposal costs

6.1.6.3 Identify challenges associated with commodity, based on commercial demand and availability, changes to military and civilian manning, flexibility, field training requirements, technology demands, effects on readiness, regulatory and legal requirements, etc.

6.1.6.4 Consider impact of contingency operations. Both positive and negative impact is analyzed. Exploit the positive while mitigating the negative through special guidance to the council.

6.1.6.5 Consider the effect on small business participation. The Council's strategy should continue to meet small business goals. Engage the Air Force Office of Small and Disadvantaged Business Utilization officials at initial stages. Support from that organization provides credibility for the Council's proposed strategies. See FAR 6.2 for additional guidance.

6.1.6.6 Consider whether local command authority may lose flexibility and funding based on the Council's objectives.

6.1.6.7 Consider effects of bundling and/or consolidation, if applicable.

6.1.7 Document current metrics. If available, this data may provide insight into the current strategy and may be useful as justification when defining future strategies. If the MAJCOMs don't currently maintain metrics of the process, have them contact their operational squadrons to determine if metrics are available.

6.1.8 Hold review sessions with major users and suppliers

6.1.8.1 Communicate with stakeholders at the MAJCOMs, DRUs, and FOAs to gain a staff level perspective of the process.

6.1.8.2 Contact stakeholders at the base/wing level to gain an understanding of the operational process.

6.1.8.3 Contact the AEF headquarters and/or individuals currently/recently deployed within the last 6 months to determine what process is used in the contingency environment.

6.1.8.4 Vendors and industry can provide perspective on the current process. They may offer up alternatives that the council would like to incorporate in their strategy.

6.1.9 Benchmark existing strategies

6.1.9.1 Analyze lessons learned from previous acquisitions. Contingency lessons are also of vital importance, as these lessons may provide the council with ways of improving the contingency environment and increasing mission capability rates.

6.1.9.2 Identify areas of the current process that could be improved for efficiency.

6.1.9.3 Document strategies in use across the Air Force, or at a single location. This information may assist in following commercial industry best practice of a centralized strategy with decentralized execution.

6.1.10 Identify leverage opportunities. Based on the results of the spend analysis, determine strategies that best leverage Air Force resources. Consider ways to lower costs, consolidation of purchasing office activities, and how the number of contracts may affect overall commodity costs.

6.2 Evaluate and Assess Current Market

6.2.1 Determine data sources. Evaluate the current market climate and processes within the market place. Sources of data may include: commerce magazines, trade associations, libraries, government subject matter experts, and through leaders in the commercial industry.

6.2.2 Document market trends, such as:

- Do price fluctuations occur periodically (i.e., each quarter or year)?
- Is the commodity readily available?
- Does the industrial sector forecast any shortages, which could produce price and delivery fluctuations?
- What is the current market share of the federal government and the Air Force?
- What is the normal reporting cycle for quarterly economic status of the leaders in the industry?
- Who are the current commercial market leaders for the commodity?

- What is the availability and number of small business vendors with government experience and commodity expertise?
- 6.2.3** Analyze market for emerging suppliers and commodities. Evaluate the market to determine what new suppliers and commodities are coming on the market in order to take advantage of potential benefits of new commodities and suppliers. Prepare for requirements that may rise from stakeholders in the future. Assess impacts of obsolete technology products, commodities, etc.
- 6.2.4** Request information from leading suppliers. The following steps are taken from Johnson & Johnson's strategic sourcing department when evaluating new suppliers:
- 6.2.4.1** Operations include process operations, process capabilities, and stability of operations. Also includes emergency preparedness—the supplier's ability to maintain operations in the event of disaster. Does the supplier have dual site manufacturing capability? If not, do they have a joint venture or partnership with another supplier? How is the supplier prepared to deal with catastrophic events?
 - 6.2.4.2** Quality addresses the assurance of quality and conformance to the company's specifications using process excellence tools such as Six Sigma.
 - 6.2.4.3** Financial vitality considers how dependable the company is financially.
 - 6.2.4.4** Engineering/technical expertise includes the depth of technical support the supplier offers. Also addresses engineering support related to manufacturability and information technology. Is the supplier CMM (Capability Maturity Model) certified?
 - 6.2.4.5** Dependability and conformance to delivery schedule
 - 6.2.4.6** Strategy and leadership involves the top-down management vision, mission, commitment, and support on where the supplier is headed and how it is tracking in relation to those issues.
- 6.2.5** Analyze supplier capacity and capabilities. Determine the volume of the commodity that can be delivered by individual suppliers. Review their manufacturing capabilities, performance capabilities, understand what they can do, etc. Use information from the supplier and from external sources.

- 6.2.6** Determine market availability of commodities. Research the availability of the commodity. Is it available commercially? Is it readily available? Is it sole sourced? Does it require exclusive manufacturing? Or, is it available off-the-shelf?
- 6.2.7** Stratify suppliers by socio-economic status. To ensure compliance with FAR requirements, break out the available suppliers by socio-economic indicators such as: small business, woman owned, minority owned, historically under utilized business zone, disabled veteran owned, large business, and so forth. Provide the types of suppliers available; the list may not include all suppliers across the U.S. but a representative sample.
- 6.2.8** Identify key industry cost drivers. Drivers calculated in the base cost of the item may include:
 - 6.2.8.1** Costs for the item or services. Do not break out each and every component of an item, but do list the cost for the main components.
 - 6.2.8.2** Labor costs are the main driver of cost in many segments of industry. The labor cost is the total labor cost included in one unit.
 - 6.2.8.3** Transportation costs aid the determination of shipping methods, storage costs, and/or expediting cost.
 - 6.2.8.4** Research and development costs for past and future efforts.
- 6.2.9** Evaluate current strategy against best practices. Identify best practices within the industry that produce increased efficiency and/or effectiveness in the current market. This may provide the council with some insight as to where industry is headed for the future.

6.3 Forecast Future Demands

- 6.3.1** Collect requirements from stakeholders. This information can be obtained from MAJCOMs, bases, and contingency units. A lesson learned is to include a “major” user representative on the commodity council. If one or more users participate in the forecasting process, accuracy increases.
- 6.3.2** Develop customer-approved demand forecast based on the requirements information.
- 6.3.3** Evaluate the demand forecast against key cost drivers. Calculate cost to satisfy 100% of the demand plan. Identify options to reduce cost impact. Negotiate tradeoffs and standardization, where possible, based on cost considerations.

- 6.3.4** Establish cost estimate for demand forecast. To estimate cost, multiply the current price by the estimated inflation rate, and then multiply that by the forecasted quantity required. The end result provides the estimated total cost. The estimate total cost provides important information for the development of strategic sourcing decisions. Consider quantity discounts as well as learning curves. These factors may have a significant impact on the average price over time.
- 6.3.5** Analyze projected funding against demand forecast. Determine the portion of the demand plan that can be satisfied within the funding constraints based on cost estimate and within any supplier capacity constraints.
- 6.3.6** Determine spend projections. Perform a statistical analysis of three year projects, based on quarterly reports.
- 6.3.7** Validate spend plan with stakeholders. Engage the stakeholders in discussions about requirements funding. Can command buys be consolidated once a quarter? Can buys be coordinated with other users to enable spend leveraging?

6.4 Create Future Strategy

- 6.4.1** Develop and prioritize commodity goals. Review original goals and determine if they are still valid. If the goals need to be adjusted or reprioritized, modify them at this point. Aligning the strategies to the goals and the overall mission of the council is vital in maintaining momentum.
- 6.4.2** Analyze gap between existing strategy and goals. Identify the gap between the results of any previous strategies and the new commodity goals.
- 6.4.3** Develop strategies for meeting specific goals. Develop the council's initial strategies based on the goals and forecasts. Initial strategies may include uniformity of acquisition; enhance savings, increase quality and/or efficiency. This includes reviewing whether existing contracts can be used, or whether new ones are necessary. Begin to consider how to meet the socio-economic goals.
- 6.4.4** Analyze spend plan against supply base capabilities. Compare the forecasted spend data and strategies with base support capabilities to ensure support is available. When looking at the support elements,

evaluate ability to warehouse commodities, the capabilities for delivery, surge support, financial services, and others.

- 6.4.5** Obtain approved supplier recommendations. Coordinate with industry consultants and leaders to obtain recommendations for strategic goals and continuous improvement. Recommendations are based on the goals of the CAMP as well as the gap analysis, the demand forecast, and the market analysis. Current acquisition and supply chain processes can be used for reference. Review and analyze recommendations and determine impact on overall strategy.
- 6.4.6** Synchronize demand forecast and supplier capabilities. Compare the demand forecast to the industry leader's production timeline. Attempt to synchronize the estimated ordering cycles with the quarterly reporting periods, or when suppliers have historically had a surplus of the commodity or any timeframe found to accomplish the council's objectives. Doing this may result in extra savings for the Air Force, as well as ensure on-time delivery, and improve customer service. Examine possible problems associated with other ordering cycles. An example of a problematic timeframe might be ordering furniture at the end of the fiscal year; often delivery is delayed up to 120 days because manufacturers are not set-up for the number of orders received within a short amount of time.
- 6.4.7** Mitigate internal/external threats to supply chain stability.
 - 6.4.7.1** An example of an internal obstacle is a reorganization of support elements causing disruption of the ordering process. This can be mitigated during the strategic process by streamlining the ordering system and eliminating unnecessary layers involved in ordering the commodity.
 - 6.4.7.2** An example of an external obstacle is when a supplier's labor force goes on strike. A mitigating action might be to have more than one supplier available for service.
 - 6.4.7.3** Chart flow of future supply chain that reflects the entire process from need identification through disposition. This chart reflects strategies developed by the council. At this point, add estimated time frames throughout the process to determine if the amount of labor to order the commodity has changed.
 - 6.4.7.4** Develop the workload responsibilities. Every position throughout the supply chain that is involved in the revised process may be documented. Capture each position's roles and responsibilities, as this may be used to forecast manning requirements, education levels,

special training needs, and workload. This chart, combined with the demand forecast chart, the ordering flow chart and the spend forecast, may be extremely useful while developing the communication plan.

6.4.8 Develop a Commodity Acquisition Management Plan (CAMP). See AFFARS 5307.104-91 for additional guidance.

6.4.8.1 The CAMP describes the acquisition strategy (see Appendix F - CAMP for template and outline).

6.4.8.2 Consider the following questions:

- Will the Council use GSA contracts currently in place, develop contracts, establish blanket purchase agreements, or will the individual contracting offices handle individual contracts?
- How will funding and payments be handled?
- Will funding be forwarded to a central ordering position or will units fund their own respective orders, and can payments be made via GPC or will they be processed through DFAS?
- The CAMP may address shipping processes, transportation, and storage processes, warranty and repair issues, priority ordering, and other administrative contractual matters.

6.4.9 Establish stakeholder consensus.

6.4.9.1 Identify organizational, systemic resistance to strategy. Representatives can probe field units for reaction and then weigh feedback against the intended strategy and process and identify problem areas.

6.4.9.2 Prepare to overcome major resistance. This may include intensive efforts such as creating alternatives to the areas of concern or they could be as simplistic as planning a survey to be conducted after implementation has been completed and the strategy has been utilized for a few months. Further analysis of survey feedback can allow for value added changes to the strategy.

6.4.9.3 Develop messages that sell the strategic process to the lowest levels of the Air Force community. Buy-in from the top is important but buy-in at the operational level is just as important.

6.5 Approve Strategy

6.5.1 The Commodity Strategy Official (CSO) approves each CAMP (see AFFARS 5307.104-91 for additional guidance).

- 6.5.2** Approve Commodity Acquisition Management Plan to ensure it accurately reflects the final strategy and provides coverage of all possible acquisition scenarios (see Appendix F - CAMP for template and outline).
- 6.5.3** Validate the strategy end-to-end to ensure completeness. Consider performing a desktop exercise to walk through the entire end-to-end process as defined by the strategy. Perform an operational test after the contractual instruments are in place, at any installation, in order to visualize performance of each step in the entire process.
- 6.5.4** Allocate workload to establish required new contracts. Once it has been determined where, how, and who will write the contractual instruments utilized in the strategy and the strategy has been validated and approved by the council, allocate the contractual workload.
- 6.5.5** Communicate workload responsibilities based on the new strategy to MAJCOMs and career field managers.
- 6.5.6** Establish review cycles for the strategy. During these review cycles, review feedback from the field, vendors, and the auditors to determine which direction the council needs to take in the future. The review cycles could be every 6 months to once per year.
- 6.6 Establish Contractual Instruments.** Depending on individual council needs and available skills, contract execution responsibilities may reside inside or outside of the commodity council. The following are recommended steps for contract execution.
- 6.6.1** Issue requests for proposal (RFPs). RFPs are used in negotiated acquisitions to communicate Government requirements to prospective contractors and to solicit proposals. RFPs for competitive acquisitions shall, at a minimum, describe:
- Government's requirement;
 - Anticipated terms and conditions that apply to the contract;
 - Information required to be in the offeror's proposal;
 - Factors and significant sub-factors that are used to evaluate the proposal and their relative importance; and,
 - Appropriate ordering provisions to ensure fair opportunity.
 - The contracting officer shall issue solicitations to potential sources in accordance with the policies and procedures in FAR 5.102, FAR 19.202-4, and FAR Part 6. Contracting officers may issue RFPs and/or authorize receipt of proposals, modifications, or revisions. For more detailed information on issuing an RFP, see FAR 15.203 -- Requests for Proposals.

- 6.6.2** Analyze Proposals. The objective of proposal analysis is to ensure that the final agreed-to price is fair and reasonable. The contracting officer is responsible for evaluating the reasonableness of the offered prices. For more detailed information on proposal analysis reference FAR 15.404.
- 6.6.3** Negotiate with suppliers. Taking into consideration the advisory recommendations, reports of contributing specialists, and the current status of the contractor's purchasing system, the contracting officer is responsible for exercising the requisite judgment needed to reach a negotiated settlement with the offeror and is solely responsible for the final price agreement. However, when significant audit or other specialist recommendations are not adopted, the contracting officer should provide rationale that supports the negotiation result in the price negotiation documentation.
- 6.6.4** Select suppliers. Contracting officers must purchase supplies and services from responsible sources at fair and reasonable prices. In establishing the reasonableness of the offered prices, the contracting officer must not obtain more information than is necessary.
- 6.6.5** Award Contracts. The contracting officer shall award a contract to the successful offeror by furnishing the executed contract or other notice of the award to that offeror.
- If the award document includes information that is different than the latest signed proposal, as amended by the offeror's written correspondence, both the offeror and the contracting officer shall sign the contract award. For more detailed information on award of a contract, see FAR 15.504.

Once the strategy has been competed and the contracting issues have been decided, having the contracts advertised and awarded could take anywhere from 60 days to six months. The length of time required for establishing the contractual instruments depends on numerous factors such as commodity complexity, vendor responsiveness, details of the strategy, etc.

6.7 Roll Out Strategy

- 6.7.1** Communicate implementation strategy to stakeholders. This may include a definition of the requirements, an identification of key suppliers, how contracts may be negotiated and developed, and how suppliers may be managed.
- 6.7.2** Conduct required training/education. All stakeholders need to understand what the strategy entails. Ensure that users, buyers, customers, and

suppliers know what processes will be changed. If the strategy includes more automation, then users will need to be trained on system essentials. If buyers are no longer going to generate contracts at a local level (e.g., transactional purchasing via an enterprise contract), then they need to know how to execute their buys under the new arrangement. If customers are required to consolidate funding with other organizations in order to leverage the Air Force spend, then they need to know how to track their expenditures back to their level in case of a local audit. If suppliers are going to generate cost proposals on a quarterly basis, they need to be given a list of forecasted requirements.

- 6.7.3** Conduct implementation kick-off meetings. Begin at the MAJCOMs and flow to operational levels. The Director coordinates these meetings with the commands to ensure maximum participation.
- 6.7.4** Transition from previous suppliers. Establish new supplier and phase out previous supplier in accordance with the CAMP.
- 6.7.5** Execute against new strategy/contracts. Strategy may initially be executed at a predetermined location and monitored for effectiveness, goal accomplishment, as well as systemic problems. Documenting lessons learned during the initial execution provides data for strategic analysis and can be used for continuous improvement. Careful monitoring determines the ability of other stakeholders to utilize the strategy and determine training deficiencies.
- 6.7.6** Verify implementation. MAJCOM and field representatives communicate with key stakeholders to identify problems encountered in the field and to verify strategic implementation. Representatives request feedback on the new strategy and processes that can be applied as lessons learned and for continuous improvement purposes.
- 6.7.7** Ensure compliance. MAJCOMS provide the council with metrics measuring data critical to the strategy improvement cycle. Each command collects data from the field units in their respective chain of command. The metrics chosen may reflect key elements of the goals and processes of the council.

6.8 Monitor and Continuously Improve Strategy

- 6.8.1** Collect feedback from stakeholders and review to evaluate strategic process progression, savings actually being realized, and changes to customer satisfaction.

- 6.8.2** Collect industry data to understand whether the strategic purchasing is affecting the market place, to ask vendors whether the process is working, what problems need to be resolved, and what are areas for process improvement.
- 6.8.3** Analyze strategy performance. Collect data for the two previous steps and analyzing where the process was when the council started vs. where it is now. Consider the following:
- Is the Air Force saving as much as forecasted?
 - Has the quality of the commodity increased, decreased, or remained unchanged?
 - Have delivery times improved or declined?
 - Are lines of communication between vendors and Air Force flowing freely?
 - Has the strategy been embraced by operational units?
 - Have contingency requirements met or exceeded the needs of our combat troops?
- 6.8.4** Change operating budgets to reflect optimization once savings are realized. The operating budgets of those affected by the strategy may be reduced or increased to reflect the current expenditures.
- 6.8.5** Reevaluate current strategy for changes needed by compiling all of the information gathered in this step of the process to determine what changes are needed.

Appendix E: Compiled Business Behaviors/Philosophies (Raw Data)

A supplier's business should be large enough to satisfy the buyer's needs	Has detailed process model for company procurement officers to follow
All commodity team members understand total cost of ownership	Has standard purchasing program for purchases external to the company
Before a supplier is selected, each member on the council individually rates (and justifies) the available suppliers, records are maintained	If low-cost supplier is not chosen, justification must be present
Buyer is responsible for finding/contacting all suppliers	Open and continuous communication with supplier
Buyer must establish total need before a supplier is selected	Performs detailed market/spend analysis
Central database of small and large suppliers maintained	Performs literature review on commodity
Combine customer requirements with thorough spend and market analysis to build a supply base "design" prior to supplier selection	Process broken down to further level that AF commodity council process
Commodity managers are responsible for finding small businesses in their area	Products are tested before a contract is signed
Commodity teams agree on what constitutes outstanding supplier performance ahead of time, records maintained	Purchasing strategies are developed ahead of time so purchases can be planned
Commodity teams are established to foster supplier relations	Quality assurance measures/practices are in place to monitor supplier performance
Commodity teams establish goals for suppliers to meet and capabilities to be improved upon	Re-evaluate signed contracts and suppliers on a regular basis
Commodity teams are responsible for in-depth spend analysis	Small business status not considered when selecting a supplier
Company has detailed process model for benchmarking	Scorecard includes customer service performance
Complete documentation of all occurrences of a transaction are maintained for future company use	Scorecard includes delivery timeliness
Conduct interviews with commodity experts to ascertain relevant information to the decision	Scorecard includes location
Consider wavering some supplier requirements based on the needs of the end-user, incorporate into scorecard	Scorecard includes order accuracy
Continue relationships with firms met through the Pilot-Mentor-Protégé program	Scorecard includes small business status
Company has standardized method of evaluating the quality and consistency of the products for each supplier	Scorecard scores are shared with the supplier in question so improvements can be made
Company purchasers attend more than 5 tech/trade shows for small businesses per year	Scorecards aid in the supplier selection, not decide it, cost is also an issue
Company requires face to face meetings and site visits for regular suppliers	Scorecards are developed and maintained on every supplier in main database

Corporate strategies align with DOD requirements	Scorecards are established for each commodity supplier by commodity teams
Corporate strategies are analyzed for small business support	Single-supplier transactions are approved by purchasing manager and justified in writing
Corporate strategies call for at least one contract through Pilot-Mentor-Protégé program	Sourcing decision based on facts--combination of score, goals, and performance
Corporate strategies direct purchasers to attend tech/trade shows for small business	Streamline supplier qualification process
Corporate strategies ensure that the customers' needs are priority	Supplier and buyer work together to improve process/lower costs
Corporate strategies for small business cover all areas	Supplier capabilities is incorporated into the supplier selection
Corporate strategies have stated small business participation goal (%)	Supplier doesn't rely totally on company business and visa versa
Corporate strategies include Pilot-Mentor-Protégé program participation	Supplier is evaluated on flexibility
Corporate strategies include small business	Supplier selected based on total benefit
Corporate strategy demands purchasers to seek out applicable small business	Supplier selection requirements are streamlined/tailored to meet need
Corporate strategies are evaluated against popular industry best-practices	Suppliers are approved by a cross-functional team before they are used
Current team members are required to train new members	Suppliers are developed in all commodity/service areas
Customers provide lists of preferred small business suppliers	Suppliers manufacturing processes are evaluated when making a supply decision--viewed as commitment to success and longevity
Customer's view of a supplier is incorporated into purchasing strategies	Suppliers relationships are maintained long-term
Establish company policies that make the buyer more attractive to the supplier--helps in the long run	Total cost of ownership is completely broken down and considered in supplier selection
Focus only on price, quality, and delivery performance	Utilize AF SBIR (Air Force Small Business Innovation Research) as a conduit to reach SB

Appendix F: Proposed Air Force Commodity Council Process Model Operating Instruction

****Author's Note**** - The sections of this proposed operating instruction that were updated or changed in some way are *italicized*.

COMMODITY COUNCIL OPERATIONS PROCESS

The Commodity Council process flow is outlined below. The nine steps are not intended to be sequential but may be performed with some overlap. This is specifically true for Review Current Strategy, Evaluate and Assess Current Strategy, and Forecast Future Demand since these three process steps require continuous coordination. Also, the process is a continuous improvement cycle and lessons learned should be adapted on an ongoing basis. If a Commodity Council develops multiple strategies, this process may be followed concurrently for each strategy. References are listed at the end of the process.

6.1 Review Current Strategy

6.1.1 Develop communication and implementation plans

6.1.1.1 Continue to refine the council Communication Plan, based on the template provided. The Communication Plan identifies all relevant stakeholders, what communication messages apply to each stakeholder group, what communication methods may be used for each message to each group as well as a schedule for the messages to be distributed. In addition, a feedback mechanism may be established to collect and evaluate data from stakeholders.

6.1.1.2 Coordinate with the Deputy Assistant Secretary of the Air Force (Contracting). This helps to ensure that lessons learned and best practices from other councils are collectively shared across the enterprise. SAF/AQC also plays a large role in helping the council manage risks within their strategy without overlooking statutory regulations, designated policy, or socio-economic goals.

6.1.1.3 Coordinate with MAJCOMs, DRUs, and FOAs. The council needs enterprise buy-in at every step of the process. The level of buy-in increases council momentum while decreasing obstacles, thus making future steps in the process more efficient.

6.1.1.4 Begin to document action items and schedule constraints that may affect the implementation of the future strategy. Examples include policies that need to be written or revised, processes that need to be reengineered, and system requirements that need to be defined.

Working groups may need to be formed to address specific action items as warranted.

- 6.1.2 Conduct spend analysis. *“Overall, spend analysis permits [organizations] to define the magnitude and characteristics of their spending, track emerging market spending, understand their internal clients and supply chain, and monitor spending with diverse suppliers for socio-economic business goals” (GAO, 2003).*

6.1.2.1 Review spend analysis specific to the commodity group. The spend analysis reflects how much money was spent, who spent the money, where the commodities are being used, the number of actions each base/installation made in conjunction with a commodity, and who the major suppliers are. *The data should include “purchases by product, dollar value, number of contracts, supplier, and purchasing organization” (Moore et al., 2004). The data should also include “suppliers by industry, firm, geography, risk, dependency or the percentage of business that a firm gets from a single customer” (Moore et al., 2004). Data could also include, but is not limited to:*

- *Justification behind the choice of a supplier*
- *Status of joint programs*
- *Problems within suppliers*
- *Problems within the industry*
- *Current supplier performance*
- *Price trends over time*
- *Results of quality audits*
- *Typical negotiation atmosphere*
- *Level and type of engineering support*

Analyze the data for (quoted from Moore et al, 2004).

- *Opportunities for savings*
 - *Suppliers with multiple contracts*
 - *Products or services with many suppliers*
 - *Many independent buying organizations*
 - *Cost growth exceeding Producer Price Index (PPI) growth*
- *Opportunities for performance improvement*
 - *Varied/poor quality and delivery*
 - *Long wait times*
 - *Little information-sharing or supplier innovation*
 - *Few multiyear contracts*
- *Risks*
 - *Only one supplier or limited competition/few bidders*
 - *Suppliers with financial problems*
 - *Low/variable demand*
 - *No contract*

- *No supplier performance incentives or commitment to improve*
- *Inadequate/poor past performance information*
- *Inappropriate scales of work*

6.1.2.2 Identify any potential subcategories. Each commodity category may have subcategories. Identify the possible sub-categories and determine which ones may be incorporated into the strategy.

6.1.2.3 Gather additional spend data as required. The data provides factual and relevant information as to the specific commodity's historical information, commercial and governmental uses, acquisition processes, and other information about the commodity as deemed relevant. This can include, but is not limited to, DD350 and DD1057 data, Government Purchase Card (GPC) spend data, and commercial processes based on end-to-end procurement (order receipt to commodity delivery and ultimate payment). This data could also include government-buy cycles for the commodity, command practices, contingency processes, and operational commodity practices. Determine the time span of pertinent historical information. The time frame determined by the council provides enough baseline data to develop and pursue council goals and objectives.

6.1.3 Identify stakeholders. Include stakeholders from all areas affected by council decisions. This includes, but is not limited to, contracting, finance, engineering, supply, transportation, and program management personnel. All stakeholders should be present throughout the formation and use of the CAMP. For example, key stakeholders for a Fuels commodity council might include transportation, maintenance, operations, contracting and finance/budget personnel. Peripheral stakeholders may include personnel from the safety office, HAZMAT office, base operations, Civil Engineering, etc.

6.1.4 Identify current initiatives/contracts. Review other DOD and federal agency activities to see if the same type of effort has been performed elsewhere. This may result in some quick wins early in the process and eliminate duplication of efforts.

6.1.5 Review current policy and statutory requirements. Policy and statutory requirements should be considered early in the process in order to avoid unnecessary delays when developing a new strategy. *For small business requirements, see the Small Business Reauthorization Act of 1997 or visit www.sba.gov. See also DFARS guidelines, to include DFARS Change Notice 20040917 which states that "agencies shall not consolidate contract requirements with a total value exceeding \$5,000,000 unless the*

acquisition strategy includes: (1) the results of market research; (2) identification of any alternative contracting approaches that would involve a lesser degree of consolidation; and (3) a determination by the senior procurement executive that the consolidation is necessary and justified.” The supplement also states that “the objective of the rule is to ensure that decisions regarding consolidation of contract requirements are made with a view toward providing small business concerns with appropriate opportunities to participate in DOD procurements as prime contractors and subcontractors.” To ensure compliance with all current policies and statutes, seek ample training from applicable governing organizations.

6.1.6 Document current processes

6.1.6.1 Processes to be detailed include: user/customer requirements, acquisition processes, supply steps, transportation functions, vendor functions, and contingency processes.

6.1.6.2 Document current cost of the commodity from inception through disposal (life-cycle cost). Costs associated with the commodity may include:

- Price of item
- Air Force labor hours required from the original request through disposal
- Internal maintenance and upkeep costs
- Warranty costs
- Normal transportation cost associated with the commodity
- Disposal cost, including any special environmental handling and disposal costs

6.1.6.3 Identify challenges associated with commodity, based on commercial demand and availability, changes to military and civilian manning, flexibility, field training requirements, technology demands, effects on readiness, regulatory and legal requirements, etc.

6.1.6.4 Consider impact of contingency operations. Both positive and negative impact is analyzed. Exploit the positive while mitigating the negative through special guidance to the council.

6.1.6.5 Consider the effect on small business participation. The Council’s strategy should continue to meet small business goals. Engage the Air Force Office of Small and Disadvantaged Business Utilization officials at initial stages. Support from that organization provides credibility for the Council’s proposed strategies. See FAR 6.2 for additional guidance.

- 6.1.6.6 Consider whether local command authority may lose flexibility and funding based on the Council's objectives.
- 6.1.6.7 Consider effects of bundling and/or consolidation, if applicable.
- 6.1.7 Document current metrics. If available, this data may provide insight into the current strategy and may be useful as justification when defining future strategies. If the MAJCOMs don't currently maintain metrics of the process, have them contact their operational squadrons to determine if metrics are available.
- 6.1.8 Hold review sessions with major users and suppliers
- 6.1.8.1 Communicate with stakeholders at the MAJCOMs, DRUs, and FOAs to gain a staff level perspective of the process.
- 6.1.8.2 Contact stakeholders at the base/wing level to gain an understanding of the operational process.
- 6.1.8.3 Contact the AEF headquarters and/or individuals currently/recently deployed within the last 6 months to determine what process is used in the contingency environment.
- 6.1.8.4 Vendors and industry can provide perspective on the current process. They may offer up alternatives that the council would like to incorporate in their strategy.
- 6.1.9 Benchmark existing strategies. *This process was adapted from Monczka et al., 2002; and Beasley et al., 1995. "Benchmarking is the continuous measuring of products, services, processes, activities and practices against a(n) [organization's] best competitors or those [organizations] recognized as industry or functional leaders." There are five main phases of benchmarking:*
- *Planning – (1) Determine which products, processes, or functions for benchmark; (2) Identify benchmark target; and (3) Determine data and information requirements.*
 - *Analysis – (1) Determine how and why the benchmark target is better; (2) Determine how to include benchmark [organization's] best practice; and (3) Identify future trends and performance levels.*
 - *Integration – (1) Communicate benchmark findings to key personnel; and (2) Establish operational targets and functional goals based on benchmarking findings.*

- *Action – (1) Include personnel responsible for carrying out plans during formulation of action plans; (2) Develop a schedule for review and updating of goals and plans; and (3) Develop system to communicate benchmarking progress.*
- *Maturity – (1) Continuous use of benchmarking at all organizational levels; and (2) Continuous performance improvement resulting from the benchmarking process.*

Be sure to identify those critical activities or processes (or costs) which will improve after the benchmarking has been performed. Petrick et al. (1994) suggests focusing on the following (quoted from Petrick et al.):

- *Trends and current levels for all key measures of operational performance*
- *Comparison of [supplier] performance with that of [other suppliers]*
- *Industry averages*
- *Industry leaders and key benchmarks*
- *Trends and current levels for all key measures of product and service quality*
- *Current quality level comparisons with principal competitors in the [supplier's] key markets, industry averages, industry leaders and others as appropriate*

Look for lessons learned from previous commodity council spirals, as well as expert experience. Finally, document all of the benchmarked process: the before-state and the after-state.

- 6.1.10 Identify leverage opportunities. Based on the results of the spend analysis, determine strategies that best leverage Air Force resources. Consider ways to lower costs, consolidation of purchasing office activities, and how the number of contracts may affect overall commodity costs.

6.2 Evaluate and Assess Current Market

- 6.2.1 Determine data sources. Evaluate the current market climate and processes within the market place. Sources of data may include: commerce magazines, trade associations, libraries, government subject matter experts, and through leaders in the commercial industry.

- 6.2.2 Document market trends, such as:

- Do price fluctuations occur periodically (i.e., each quarter or year)?
- Is the commodity readily available?
- Does the industrial sector forecast any shortages, which could produce price and delivery fluctuations?

- What is the current market share of the federal government and the Air Force?
- What is the normal reporting cycle for quarterly economic status of the leaders in the industry?
- Who are the current commercial market leaders for the commodity?
- What is the availability and number of small business vendors with government experience and commodity expertise?

It is necessary to research both industry and government literature to gain a true understanding. Possible sources are trade and professional journals, government regulations, and online database searches. Some suggestions are:

- *Federal Acquisition Regulation (FAR)*
- *Defense Federal Acquisition Regulation Supplement (DFARS)*
- *Air Force Federal Acquisition Regulation Supplement (AFFARS)*
- *Air Force Institute of Technology (AFIT) has an academic library which has multi-database search capability (<http://library.afit.edu/>)*

Interviews of commercial and government experts may yield useful information. Understand and document industry size, industry utilization, technology changes, major trends, industry growth and contraction, market segmentation, and government regulations which influence the market. Be able to identify the major contributors to the market, including organization name, personnel and capabilities, customers served, budgets, strategies, expertise, etc.

6.2.3 Analyze market for emerging suppliers and commodities. Evaluate the market to determine what new suppliers and commodities are coming on the market in order to take advantage of potential benefits of new commodities and suppliers. Prepare for requirements that may rise from stakeholders in the future. Assess impacts of obsolete technology products, commodities, etc. *Analyze published literature for potential sources of information. Access websites such as www.sba.gov and others which contain main databases of industry-leading companies.*

6.2.4 Request information from leading suppliers. The following steps are taken from Johnson & Johnson's strategic sourcing department when evaluating new suppliers:

6.2.4.1 Operations include process operations, process capabilities, and stability of operations. Also includes emergency preparedness—the supplier's ability to maintain operations in the event of disaster. Does

the supplier have dual site manufacturing capability? If not, do they have a joint venture or partnership with another supplier? How is the supplier prepared to deal with catastrophic events?

6.2.4.2 Quality addresses the assurance of quality and conformance to the company's specifications using process excellence tools such as Six Sigma.

6.2.4.3 Financial vitality considers how dependable the company is financially.

6.2.4.4 Engineering/technical expertise includes the depth of technical support the supplier offers. Also addresses engineering support related to manufacturability and information technology. Is the supplier CMM (Capability Maturity Model) certified?

6.2.4.5 Dependability and conformance to delivery schedule

6.2.4.6 Strategy and leadership involves the top-down management vision, mission, commitment, and support on where the supplier is headed and how it is tracking in relation to those issues.

6.2.5 *Evaluate suppliers based on detailed criteria. Survey end-users and other commodity experts to determine the volume of the commodity that can be delivered by individual suppliers. Monczka et al. (2002) presents the following list of key supplier evaluation criteria (quoted from Monczka et al.):*

- a) *Supplier management capability. It is important to understand the capabilities of the management of a supplier. Asking pertinent questions regarding management may provide some valuable insight into the attractiveness of a company. Some questions which may be asked are:*
 - *Does executive management practice long-range planning?*
 - *Has management committed itself to total quality management and continuous improvement?*
 - *Is there a high degree of turnover among managers?*
 - *What is the professional experience of the managers?*
 - *Is there a vision about the future direction of the company?*
 - *How many purchasing professionals are certified purchasing managers?*
- b) *Overall personnel capabilities. This refers to non-management personnel. A company should have a highly-trained and consistent stable of employees. Some major points which may be evaluated are:*
 - *The degree to which employees support and are committed to quality and continuous improvement*

- *The overall skills and abilities of the workforce*
 - *The state of employee-management relations*
 - *Workforce flexibility*
 - *Employee morale*
 - *Workforce turnover*
 - *The opportunity and willingness of employees to contribute to improving a supplier's operation*
- c) *Cost structure.* *This component requires a complete understanding of the various costs which a particular supplier has. These might include direct and indirect labor, material costs, and general overhead costs. This area of analysis may be difficult to complete thoroughly because suppliers may have accounting systems which do not allow for proper evaluation, or the company in question might view the information as proprietary.*
- d) *Total quality performance, systems, and philosophy.* *This component not only addresses such areas as management commitment, statistical process control, and number of defects, but it also includes safety training, and facilities and equipment maintenance.*
- e) *Process and technological capability, including the supplier's design capability.* *Process consists of the technology, design, methods, and equipment used to manufacture a product or deliver a service. The production process which a supplier uses affects the required technology that they must have, the skills that their employees must have, and type and complexity of the equipment they must use. The evaluation of a supplier's process should result in an understanding of future company processes, the technical aspirations of the supplier, and the estimated resources which will be required to accomplish their goals.*
- f) *Environmental regulations compliance.* *The government has implemented strict regulations regarding pollution. In general, purchasers do not want to be associated with violators of the applicable laws. Some possible areas for evaluation are:*
- *Public disclosure of environmental record*
 - *Hazardous waste management*
 - *Toxic waste pollution management*
 - *Environmentally friendly product packaging*
- g) *Financial capability and stability.* *This area of evaluation is of utmost importance as a company who is not financially stable is a major risk. A supplier with low financial stability may go out of business, they may not have the resources to complete an order, or they may become too financially dependant on the purchaser (which may have dramatic effects if they are not selected by the buyer when the contract is renewed). Many resources are available to evaluate companies who are publicly owned. Some websites which may provide useful information are:*

- *Yahoo! Financial* (www.biz.yahoo.com)
 - *Morningstar* (www.morningstar.net)
 - *Marketwatch* (www.marketwatch.com)
 - *411 Stocks* (www.411stocks.com)
 - *The Street* (www.thestreet.com)
 - *Dun and Bradstreet* (www.dnb.com)
 - *Hoover's* (www.hoovers.com)
- h) *Production scheduling and control systems, including supplier delivery performance.* *This area includes those systems that release, schedule, and control a supplier's selection process. Some questions which may be asked are:*
- *Does the supplier use a material requirements planning system to ensure the availability of required components?*
 - *Does the supplier track material and production cycle time and compare this against a performance objective or standard?*
 - *Does the supplier's production scheduling system support a purchaser's just-in-time requirements?*
- i) *Information systems capability.* *Electronic communication is vital to day-to-day operations. Web-based platforms may increase turnaround time on orders and improve customer satisfaction. Also, they allow for 24-hour operations (if the supplier does not have a representative on call all of the time). A supplier should be evaluated on their current capability, their company philosophy on implementing business to business e-solutions, and their expectations for the use of technology in the future.*
- j) *Supplier purchasing strategies, policies, and techniques.* *This area is key to integrated supply chain management. This information may be obtained directly from the supplier in question, or from other firms who have business relationships with the company. Integrated systems may improve planning and forecasting, reduce order lead-time, reduce in-transit inventory, and reduce costs.*
- k) *Longer-Term Relationship Potential.* *Although the survey responses did not include specific supplier selection criteria, they did mention the usefulness of pursuing a supplier/buyer relationship long-term. This area evaluates a supplier's willingness and ability to develop long-term relationships with suppliers. Some questions which may be asked to understand company views on supplier development are:*
- *Has the supplier indicated a willingness or commitment to a longer-term or partnership arrangement?*
 - *Is the supplier willing to commit resources that it cannot or will not use in other relationships?*
 - *How early in the product design stage is the supplier willing or able to participate?*
 - *What does the supplier bring to the relationship that is unique?*

- *Does the supplier have a genuine interest in joint problem solving?*
- *How much future planning is the supplier willing to share?*
- *Will the supplier share cost data?*
- *Is the supplier willing to come to us first with innovations?*

Chao et al. (1993) presents ten areas for evaluation; five subjective and five objective. The five objective criterion are (1) the percentage of orders which arrive on-time, (2) the number of order mistakes that a supplier makes, (3) the percentage of produced items which meet quality specifications, (4) the actual cost compare to the initial target cost, and (5) the average time that a supplier takes to receive an order and send out the shipment. The five subjective criterion are (1) professionalism, (2) negotiating ability, (3) commodity knowledge, (4) cultivating qualified suppliers, and (5) how well the supplier teams with the buyer.

- 6.2.6 Determine market availability of commodities. Research the availability of the commodity. Is it available commercially? Is it readily available? Is it sole sourced? Does it require exclusive manufacturing? Or, is it available off-the-shelf?
- 6.2.7 Stratify suppliers by socio-economic status. To ensure compliance with FAR requirements (Part 19), break out the available suppliers by socio-economic indicators such as small business, woman owned, minority owned, historically under utilized business zone, disabled veteran owned, large business, and so forth. Provide the types of suppliers available; the list may not include all suppliers across the U.S. but a representative sample. *Determine the level of participation of small and disadvantaged business in previous contracts. Set minimum threshold for small and disadvantaged supplier participation for current spirals. Document this figure and incorporate it in future steps.*
- 6.2.8 Identify key industry cost drivers. Drivers calculated in the base cost of the item may include:
 - 6.2.8.1 Costs for the item or services. Do not break out each and every component of an item, but do list the cost for the main components.
 - 6.2.8.2 Labor costs are the main driver of cost in many segments of industry. The labor cost is the total labor cost included in one unit.
 - 6.2.8.3 Transportation costs aid the determination of shipping methods, storage costs, and/or expediting cost.
 - 6.2.8.4 Research and development costs for past and future efforts.

- 6.2.9 Evaluate current strategy against best practices. Identify best practices within the industry that produce increased efficiency and/or effectiveness in the current market. *How does the current strategy match-up to the manner in which industry develops and negotiates contracts, performs market research, conducts supplier management, and develops current suppliers? (Moore et al., 2002) Extensive literature exists for most commodities. Search educational databases for the most up-to-date information (these can be found at <http://library.afit.edu/>). This may provide the council with some insight as to where industry is headed for the future.*

6.3 Forecast Future Demands

- 6.3.1 Collect requirements from stakeholders. This information can be obtained from MAJCOMs, bases, and contingency units. *At least one member of the commodity council should be an end-user with extensive experience in the commodity in question. If more end-users are available, try to incorporate their views and opinions into the council decisions. Research has shown that if one or more users participate in the forecasting process, accuracy increases. Research has also shown that industry-leading firms fully understand and monitor customer satisfaction and dissatisfaction levels on an ongoing basis. If possible, this should be incorporated into the council's responsibilities. Some areas to address are how the council (quoted from Petrick et al., 1994):*
- *Determines, implements, evaluates, and improves its customer relationship management practices*
 - *Channels customers into seeking assistance or registering complaints*
 - *Creates follow-up procedures for customers designed to build relationships and seek feedback for improvement*
 - *Monitors trends in both customer satisfaction and dissatisfaction with the [supplier's] products and services*
- 6.3.2 Develop customer-approved demand forecast based on the requirements information.
- 6.3.3 Evaluate the demand forecast against key cost drivers. Calculate cost to satisfy 100% of the demand plan. Identify options to reduce cost impact. Negotiate tradeoffs and standardization, where possible, based on cost considerations.
- 6.3.4 Establish cost estimate for demand forecast. To estimate cost, multiply the current price by the estimated inflation rate, and then multiply that by the forecasted quantity required. The end result provides the estimated

total cost. The estimate total cost provides important information for the development of strategic sourcing decisions. Consider quantity discounts as well as learning curves. These factors may have a significant impact on the average price over time.

- 6.3.5 Analyze projected funding against demand forecast. Determine the portion of the demand plan that can be satisfied within the funding constraints based on cost estimate and within any supplier capacity constraints.
- 6.3.6 Determine spend projections. Perform a statistical analysis of three year projects, based on quarterly reports.
- 6.3.7 Validate spend plan with stakeholders. Engage the stakeholders in discussions about requirements funding. Can command buys be consolidated once a quarter? Can buys be coordinated with other users to enable spend leveraging?

6.4 Create Small Supplier Strategy. *In the illustration, sections 6.4 and 6.5 appear to occur simultaneously—that is the intent. Creating small supplier strategy only appears prior to creating large supplier strategy for flow of this instruction. Much of the wording in this section is identical to that of 6.5. However, the focus here is on establishing and selecting small and disadvantaged suppliers to meet socio-economic goals.*

- 6.4.1 Develop and prioritize commodity goals *based on the small business targets established earlier*. Review original goals and determine if they are still valid. If the goals need to be adjusted or reprioritized, modify them at this point. Aligning the strategies to the goals and the overall mission of the council, *as well as small and disadvantaged business requirements* is vital in maintaining momentum.
- 6.4.2 Analyze gap between existing strategy and goals. Identify the gap between the results of any previous strategies and the new commodity goals. *Determine the level of small business participation necessary to achieve the established goals.*
- 6.4.3 Develop strategies for meeting specific goals *to include socio-economic*. Develop the council's initial strategies based on the goals and forecasts. Initial strategies may include uniformity of acquisition; enhance savings, increase quality and/or efficiency. This includes reviewing whether existing contracts can be used, or whether new ones are necessary (*this requires analyzing the existing contracts for small business participation. Be advised that some small business may be included as sub-contractors*).

Be sure to consider all rules and regulations for DOD acquisitions (e.g., DFARS Change Notice 20040917 which is presented above).

- 6.4.4 Analyze spend plan against supply base capabilities. Compare the forecasted spend data and strategies with base support capabilities to ensure support is available. When looking at the support elements, evaluate ability to warehouse commodities, the capabilities for delivery, surge support, financial services, and others.
- 6.4.5 Obtain approved supplier recommendations. Coordinate with industry consultants and leaders to obtain recommendations for strategic goals and continuous improvement. Recommendations are based on the goals of the CAMP as well as the gap analysis, the demand forecast, and the market analysis. Current acquisition and supply chain processes can be used for reference. Review and analyze recommendations and determine impact on overall strategy. *Include end-user's view as part of the overall assessment.*
- 6.4.6 Synchronize demand forecast and supplier capabilities. Compare the demand forecast to the industry leader's production timeline. Attempt to synchronize the estimated ordering cycles with the quarterly reporting periods, or when suppliers have historically had a surplus of the commodity or any timeframe found to accomplish the council's objectives. Doing this may result in extra savings for the Air Force, as well as ensure on-time delivery, and improve customer service. Examine possible problems associated with other ordering cycles. An example of a problematic timeframe might be ordering furniture at the end of the fiscal year; often delivery is delayed up to 120 days because manufacturers are not set-up for the number of orders received within a short amount of time.
- 6.4.7 Mitigate internal/external threats to supply chain stability.
 - 6.4.7.1 An example of an internal obstacle is a reorganization of support elements causing disruption of the ordering process. This can be mitigated during the strategic process by streamlining the ordering system and eliminating unnecessary layers involved in ordering the commodity.
 - 6.4.7.2 An example of an external obstacle is when a supplier's labor force goes on strike. A mitigating action might be to have more than one supplier available for service.
 - 6.4.7.3 Chart flow of future supply chain that reflects the entire process from need identification through disposition. This chart reflects strategies developed by the council. At this point, add estimated time frames

throughout the process to determine if the amount of labor to order the commodity has changed.

6.4.7.4 Develop the workload responsibilities. Every position throughout the supply chain that is involved in the revised process may be documented. Capture each position's roles and responsibilities, as this may be used to forecast manning requirements, education levels, special training needs, and workload. This chart, combined with the demand forecast chart, the ordering flow chart and the spend forecast, may be extremely useful while developing the communication plan.

6.4.8 Develop a Commodity Acquisition Management Plan (CAMP). See AFFARS 5307.104-91 for additional guidance.

6.4.8.1 The CAMP describes the acquisition strategy (see Appendix F - CAMP for template and outline).

6.4.8.2 Consider the following questions:

- Will the Council use GSA contracts currently in place, develop contracts, establish blanket purchase agreements, or will the individual contracting offices handle individual contracts?
- How will funding and payments be handled?
- Will funding be forwarded to a central ordering position or will units fund their own respective orders, and can payments be made via GPC or will they be processed through DFAS?
- *The CAMP may address shipping processes, transportation, and storage processes, warranty and repair issues, priority ordering, and other administrative contractual matters.*

6.4.9 Establish stakeholder consensus.

6.4.9.1 Identify organizational, systemic resistance to strategy.

Representatives can probe field units for reaction and then weigh feedback against the intended strategy and process and identify problem areas.

6.4.9.2 Prepare to overcome major resistance. This may include intensive efforts such as creating alternatives to the areas of concern or they could be as simplistic as planning a survey to be conducted after implementation has been completed and the strategy has been utilized for a few months. Further analysis of survey feedback can allow for value added changes to the strategy.

6.4.9.3 Develop messages that sell the strategic process to the lowest levels of the Air Force community. Buy-in from the top is important but buy-in at the operational level is just as important.

6.5 Create Large Supplier Strategy. *In the illustration, sections 6.4 and 6.5 appear to occur simultaneously—that is the intent. Creating small supplier strategy only appears prior to creating large supplier strategy for flow of this instruction. Much of the wording in this section is identical to that of 6.4. However, the focus here is on establishing and selecting the additional suppliers necessary to satisfy the requirements.*

- 6.5.1 Continue to develop and prioritize the remaining commodity goals. Review original goals and determine if they are still valid. If the goals need to be adjusted or reprioritized, modify them at this point. Aligning the strategies to the goals and the overall mission of the council is vital in maintaining momentum.
- 6.5.2 Continue to analyze gap between existing strategy and goals. Identify the gap between the results of any previous strategies and the new commodity goals.
- 6.5.3 Continue to develop strategies for meeting specific goals. Develop the council's initial strategies based on the goals and forecasts. Initial strategies may include uniformity of acquisition; enhance savings, increase quality and/or efficiency. This includes reviewing whether existing contracts can be used, or whether new ones are necessary. Verify that proper attention has been paid to the socio-economic goals.
- 6.5.4 Continue to analyze spend plan against supply base capabilities. Compare the forecasted spend data and strategies with base support capabilities to ensure support is available. When looking at the support elements, evaluate ability to warehouse commodities, the capabilities for delivery, surge support, financial services, and others.
- 6.5.5 Obtain approved supplier recommendations. Coordinate with industry consultants and leaders to obtain recommendations for strategic goals and continuous improvement. Recommendations are based on the goals of the CAMP as well as the gap analysis, the demand forecast, and the market analysis. Current acquisition and supply chain processes can be used for reference. Review and analyze recommendations and determine impact on overall strategy.
- 6.5.6 Continue to synchronize demand forecast and supplier capabilities. Compare the demand forecast to the industry leader's production timeline.

Attempt to synchronize the estimated ordering cycles with the quarterly reporting periods, or when suppliers have historically had a surplus of the commodity or any timeframe found to accomplish the council's objectives. Doing this may result in extra savings for the Air Force, as well as ensure on-time delivery, and improve customer service. Examine possible problems associated with other ordering cycles. An example of a problematic timeframe might be ordering furniture at the end of the fiscal year; often delivery is delayed up to 120 days because manufacturers are not set-up for the number of orders received within a short amount of time.

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6.5.7.2 An example of an external obstacle is when a supplier's labor force goes on strike. A mitigating action might be to have more than one supplier available for service.

6.5.7.3 Chart flow of future supply chain that reflects the entire process from need identification through disposition. This chart reflects strategies developed by the council. At this point, add estimated time frames throughout the process to determine if the amount of labor to order the commodity has changed.

6.5.7.4 Develop the workload responsibilities. Every position throughout the supply chain that is involved in the revised process may be documented. Capture each position's roles and responsibilities, as this may be used to forecast manning requirements, education levels, special training needs, and workload. This chart, combined with the demand forecast chart, the ordering flow chart and the spend forecast, may be extremely useful while developing the communication plan.

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6.5.8.1 The CAMP describes the acquisition strategy (see Appendix F - CAMP for template and outline).

6.5.8.2 Consider the following questions:

- Will the Council use GSA contracts currently in place, develop contracts, establish blanket purchase agreements,

or will the individual contracting offices handle individual contracts?

- How will funding and payments be handled?
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6.5.9.3 Develop messages that sell the strategic process to the lowest levels of the Air Force community. Buy-in from the top is important but buy-in at the operational level is just as important.

6.6 Approve Strategy.

6.6.1 The Commodity Strategy Official (CSO) approves each CAMP (see AFFARS 5307.104-91 for additional guidance).

6.6.2 Approve Commodity Acquisition Management Plan to ensure it accurately reflects the final strategy and provides coverage of all possible acquisition scenarios (see Appendix F - CAMP for template and outline).

6.6.3 Validate the strategy end-to-end to ensure completeness. Consider performing a desktop exercise to walk through the entire end-to-end process as defined by the strategy. Perform an operational test after the contractual instruments are in place, at any installation, in order to visualize performance of each step in the entire process.

- 6.6.4 Allocate workload to establish required new contracts. Once it has been determined where, how, and who will write the contractual instruments utilized in the strategy and the strategy has been validated and approved by the council, allocate the contractual workload.
- 6.6.5 Communicate workload responsibilities based on the new strategy to MAJCOMs and career field managers.
- 6.6.6 Establish review cycles for the strategy. During these review cycles, review feedback from the field, vendors, and the auditors to determine which direction the council needs to take in the future. The review cycles could be every 6 months to once per year.

6.7 Establish Contractual Instruments. Depending on individual council needs and available skills, contract execution responsibilities may reside inside or outside of the commodity council. The following are recommended steps for contract execution.

6.7.1 Issue requests for proposal (RFPs).

6.7.1.1 *Issue RFPs to small and disadvantaged suppliers.*

6.7.1.2 *Issue RFPs to other suppliers.*

6.7.1.3 RFPs are used in negotiated acquisitions to communicate Government requirements to prospective contractors and to solicit proposals. RFPs for competitive acquisitions shall, at a minimum, describe:

- Government's requirement;
- Anticipated terms and conditions that apply to the contract;
- Information required to be in the offeror's proposal;
- Factors and significant sub-factors that are used to evaluate the proposal and their relative importance; and,
- Appropriate ordering provisions to ensure fair opportunity.

The contracting officer shall issue solicitations to potential sources in accordance with the policies and procedures in FAR 5.102, FAR 19.202-4, and FAR Part 6. Contracting officers may issue RFPs and/or authorize receipt of proposals, modifications, or revisions. For more detailed information on issuing an RFP, see FAR 15.203 -- Requests for Proposals.

6.7.2 Analyze Proposals. The objective of proposal analysis is to ensure that the final agreed-to price is fair and reasonable. The contracting officer is responsible for evaluating the reasonableness of the offered prices. For more detailed information on proposal analysis reference FAR 15.404.

6.7.3 Negotiate with suppliers. Taking into consideration the advisory recommendations, reports of contributing specialists, and the current status of the contractor's purchasing system, the contracting officer is responsible for exercising the requisite judgment needed to reach a negotiated settlement with the offeror and is solely responsible for the final price agreement. *Consider the following:*

- *Commodity research*
- *Market analysis*
- *Lessons learned from previous contracts*
- *Supplier performance*
- *SWOT analysis*
- *Purchase objectives*

Ensure that the time horizon and scope of the contracts are finalized and understood by all parties. Performance targets for quality, costs, time should be set at acceptable level comparable to industry bests. Discuss remedial actions in case of time delays or poor supplier performance. Clearly state contract termination, modification, and continuous improvement targets. Describe additional partnership benefits (technical support, training, upgrades, etc.). Conduct commodity council review to ensure completeness of the contracts. When significant audit or other specialist recommendations are not adopted, the contracting officer should provide rationale that supports the negotiation result in the price negotiation documentation. Evaluate the commodity against Figure 1 to determine if buyer leverage opportunities exist.

The Power Matrix and Potential Leverage

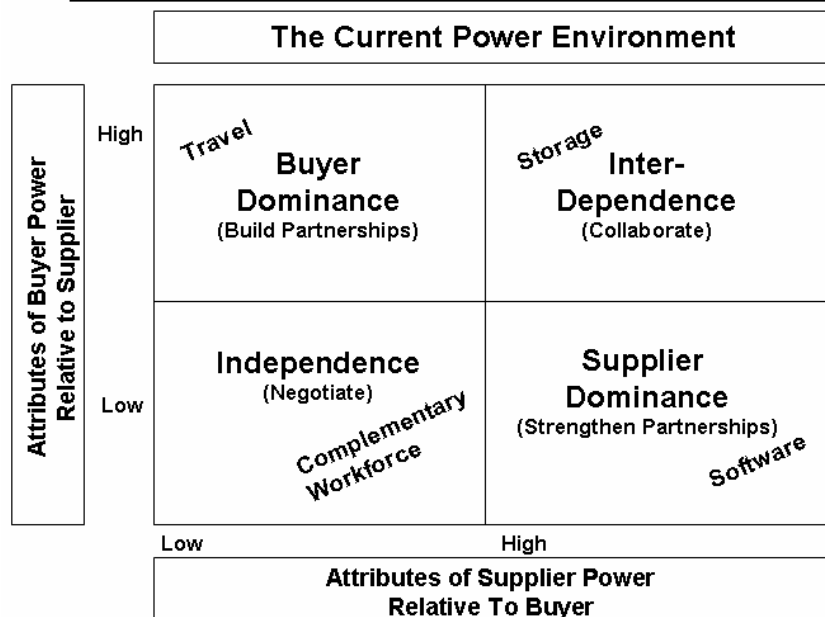


Figure 1 – Buyer/Supplier Power Matrix (IBM, 2004)

If the preferred supplier is considered a large business, consider adding

contractual clauses which require the subcontracting of small businesses by the main contractor in fulfillment of the requirements.

6.7.4 Select suppliers. *Break-out suppliers by socio-economic status.*

Determine:

- *The percentage of business going to small and disadvantaged firms*
- *The percentage of business going to larger firms*

Are the proposed strategies in line with the regulations and congressional mandates (Small Business Reauthorization Act of 1997) and the most recent FAR, DFARS, and AFFARS guidelines? The company selected should offer a bid which is competitive with bids from other companies, be financially stable, and a good strategy fit. Further, the supplier must provide a quality product and technical service when it is needed. Gather company information from performance scorecards, financial records, interviews, and literature searches. Compare the data against those of the other suppliers involved. Making the correct decision is vital. Keep in mind that contracting officers must purchase supplies and services from responsible sources at fair and reasonable prices.

6.7.5 Award Contracts. The contracting officer shall award a contract to the successful offeror by furnishing the executed contract or other notice of the award to that offeror.

- a) If the award document includes information that is different than the latest signed proposal, as amended by the offeror's written correspondence, both the offeror and the contracting officer shall sign the contract award. For more detailed information on award of a contract, see FAR 15.504.

Once the strategy has been competed and the contracting issues have been decided, having the contracts advertised and awarded could take anywhere from 60 days to six months. The length of time required for establishing the contractual instruments depends on numerous factors such as commodity complexity, vendor responsiveness, details of the strategy, etc.

6.8 Roll Out Strategy

- 6.8.1 Communicate implementation strategy to stakeholders. This may include a definition of the requirements, an identification of key suppliers, how contracts may be negotiated and developed, and how suppliers may be managed. *Emphasize the development of the supplier-buyer relationship. Can this supplier aide in future strategies? What collaborative opportunities exist (technology development, process enhancement, information sharing, etc)? Petrick et al. (1994) suggests focusing on the*

following when developing a supplier relationship (quoted from Petrick et al.):

- *Trends and current levels for the most important indicators of supplier quality*
- *Objective comparisons of the company's supplier quality levels with those of competitors and/or with other benchmark firms*
- *Building partnership relations with suppliers to enhance the suppliers' quality standards*

- 6.8.2 Conduct required training/education. All stakeholders need to understand what the strategy entails. Ensure that users, buyers, customers, and suppliers know what processes will be changed. If the strategy includes more automation, then users will need to be trained on system essentials. If buyers are no longer going to generate contracts at a local level (e.g., transactional purchasing via an enterprise contract), then they need to know how to execute their buys under the new arrangement. If customers are required to consolidate funding with other organizations in order to leverage the Air Force spend, then they need to know how to track their expenditures back to their level in case of a local audit. If suppliers are going to generate cost proposals on a quarterly basis, they need to be given a list of forecasted requirements.
- 6.8.3 Conduct implementation kick-off meetings. Begin at the MAJCOMs and flow to operational levels. The Director coordinates these meetings with the commands to ensure maximum participation.
- 6.8.4 Transition from previous suppliers. Establish new supplier and phase out previous supplier in accordance with the CAMP. *Supplier development strategies should be developed and implemented for certain commodities. Supplier development is “a bilateral effort by both the buying and supplying organizations to jointly improve the supplier’s performance and/or capabilities in one or more of the following areas: cost, quality, delivery, time-to-market, technology, environmental responsibility, managerial capability, and financial viability” (Krause et al., 1999). The article by Krause presents an excellent summary of developing a supplier. Figure 2 presents a visual representation of those suppliers who should be considered for supplier development and the characteristics of each segment.*

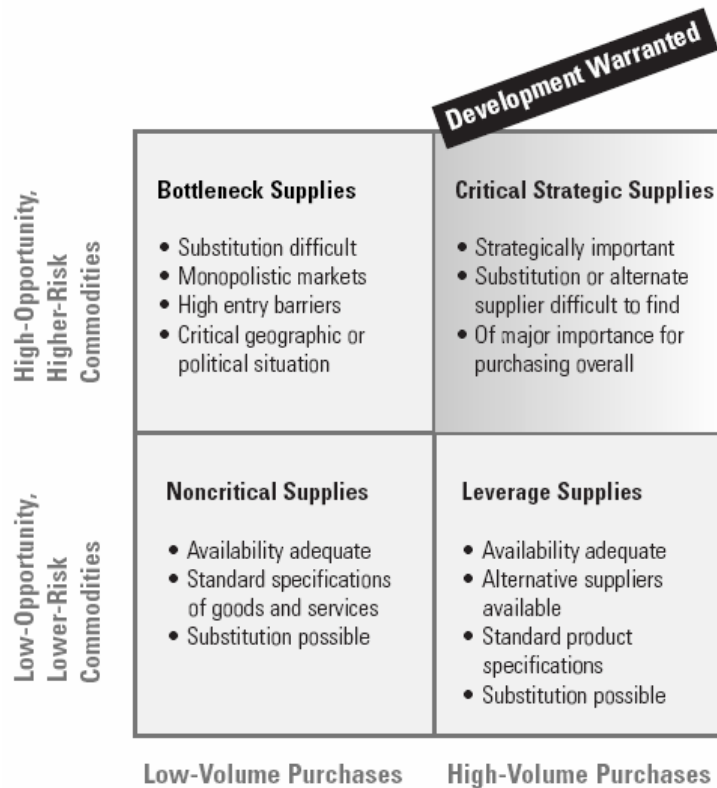


Figure 2 – Commodity Portfolio Matrix (Handfield et al., 2000)

6.8.4.1 If the contract is being entered into with a previous or current supplier, determine what processes are in place to build and develop that supplier-buyer relationship. Discuss continuous improvement opportunities, best-practices identification and transfer, and shared market analysis strategies. Do not let barriers hinder supplier development. The following are some typical barriers and their suggested solutions (quoted from Monczka et al., 2002):

- The buying company's purchase volume from the supplier does not justify development investment. Solution: Standardization and single sourcing.
- No immediate benefit is evident to the buying organization. Solution: Pursue small wins.
- Importance of commodity purchased does not justify development effort. Solution: Take a longer-term focus.
- Lack of executive support within the buying organization for supplier development. Solution: Prove the benefits.
- Supplier is reluctant to share information on costs and/or processes. Solution: Create a supplier ombudsman position.
- Confidentiality inhibits sharing information. Solution: Confidentiality agreements.

- *Supplier does not trust the buying organization. Solution: Spell it out.*
- *Organizational cultures are poorly aligned. Solution: Adapt approach to local conditions.*
- *Not enough inducements to participate are provided to the supplier. Solution: designed in motivation, include financial incentives.*
- *Lack of commitment on the part of the supplier's top management. Solution: Implement after commitment.*
- *Supplier's top management agrees to improvement proposals but fails to implement them. Solution: Supplier champions.*
- *Supplier lacks engineering resources to implement solutions. Solution: Direct support.*
- *Supplier lacks required information systems to implement solutions. Solution: Direct electronic data interchange support.*
- *Suppliers are not convinced development will provide benefits. Solution: Let suppliers know where they stand.*
- *Supplier lacks employee skill base to implement solutions. Solution: Establish training centers.*

Monczka et al. (2002) is a strategic purchasing textbook used at the Air Force Institute of Technology and the Navel Post Graduate School. Additional detail on the barriers listed above can be found in this textbook.

6.8.4.2 *If the contract is being entered with a new supplier, establish supplier development guidelines with the help of the supplier's management.*

- 6.8.5 Execute against new strategy/contracts. Strategy may initially be executed at a predetermined location and monitored for effectiveness, goal accomplishment, as well as systemic problems. Documenting lessons learned during the initial execution provides data for strategic analysis and can be used for continuous improvement. Careful monitoring determines the ability of other stakeholders to utilize the strategy and determine training deficiencies.
- 6.8.6 Verify implementation. MAJCOM and field representatives communicate with key stakeholders to identify problems encountered in the field and to verify strategic implementation. Representatives request feedback on the new strategy and processes that can be applied as lessons learned and for continuous improvement purposes.
- 6.8.7 Ensure compliance. MAJCOMS provide the council with metrics measuring data critical to the strategy improvement cycle. Each command

collects data from the field units in their respective chain of command. The metrics chosen may reflect key elements of the goals and processes of the council.

6.9 Monitor and Continuously Improve Strategy

- 6.9.1 Collect feedback from stakeholders and review to evaluate strategic process progression, savings actually being realized, and changes to customer satisfaction.
- 6.9.2 Collect industry data to understand whether the strategic purchasing is affecting the market place, to ask vendors whether the process is working, what problems need to be resolved, and what are areas for process improvement.
- 6.9.3 Analyze strategy performance. Collect data for the two previous steps and analyzing where the process was when the council started vs. where it is now. Consider the following:
 - Is the Air Force saving as much as forecasted?
 - Has the quality of the commodity increased, decreased, or remained unchanged?
 - Have delivery times improved or declined?
 - Are lines of communication between vendors and Air Force flowing freely?
 - Has the strategy been embraced by operational units?
 - Have contingency requirements met or exceeded the needs of our combat troops?
- 6.9.4 Change operating budgets to reflect optimization once savings are realized. The operating budgets of those affected by the strategy may be reduced or increased to reflect the current expenditures.
- 6.9.5 Reevaluate current strategy for changes needed by compiling all of the information gathered in this step of the process to determine what changes are needed.

References For The Proposed Model

- Beasley, Gary and Joseph Cook. “The ‘What,’ ‘Why,’ and ‘How’ of Benchmarking.”
Agency Sales, Volume 25, Issue 6, Page 52. June 1995.
- Chao, Chiang-Nan, Eberhard E. Scheuing, and William A. Ruch. “Purchasing Performance Evaluation: An Investigation of Different Perspectives.”

International Journal of Purchasing and Materials Management. National Association of Purchasing Management, Inc. 1993.

- General Accounting Office (GAO). “*BEST PRACTICES – Improved Knowledge of DOD Service Contracts Could Reveal Significant Savings.*” Report to the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate. Washington DC: GPO. June 2003.
- Handfield, Robert B., Daniel R. Krause, Thomas V. Scannell, and Robert M. Monczka. “Avoid the Pitfalls in Supplier Development.” *Sloan Management Review*: Massachusetts Institute of Technology. Winter 2000.
- “*IBM Procurement Discussion – Procurement’s Transformation Story.*” Briefing Given by IBM Global Procurement. 2004.
- Krause, Daniel R. and Robert B. Handfield. “Developing A World-Class Supply Base.” *CAPS Research*. 1999.
- Leenders, Michiel R., Harold E. Fearon, Anna E. Flynn, and P. Fraser Johnson. “*Purchasing and Supply Management.*” McGraw-Hill Irwin: Boston. 2002.
- Moore, Nancy Y., Laura H. Baldwin, Frank Camm, and Cynthia R. Cook. “*Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms.*” Documented briefing based upon research performed by the RAND Corporation, Santa Monica, California, sponsored by the United States Air Force under contract F49642-01-C-0003. 2002.
- Moore, Nancy Y., Cynthia Cook, Charles Lindeblatt, Athar Osama. “*Using a Spend Analysis to Help Identify Prospective Air Force Purchasing and Supply Initiatives: Summary of Selected Findings.*” Documented briefing based upon research performed by the RAND Corporation, Santa Monica, California, sponsored by the United States Air Force under contract F49642-01-C-0003. 2004.
- Monczka, Robert, Robert Trent, and Robert Handfield. “*Purchasing and Supply Chain Management.*” South-Western Publishing, Thomson Learning. 2002.
- Petrick, Joseph, Robert Scherer, Frederick Westfall, and Janice Crabtree Wilson. “Benchmarking and Improving Core Competencies.” *The Journal for Quality and Participation*. 1994.

Bibliography

- Aberdeen Group, Inc. “*Spend Visibility: Maximizing Value in Strategic Sourcing, An Executive White Paper*,” accessed on 20 June 2004 at <http://www.aberdeen.com/2001/research/08022766.asp>. August 2002.
- Acquisition Community Connection. Accessed on 14 September 2004 at http://acc.dau.mil/simplify/ev.php?ID=11299_201&ID2=DO_TOPIC. 2004.
- Acs, Zoltan J. (Ed.). “*Are Small Firms Important: Their Role And Impact*.” Kluwer Academic Publishers, Boston, MA. 1999.
- Acs, Zoltan J. and David B. Audretsch. “Innovation in Large and Small Firms: An Empirical Analysis. *The American Economic Review*. September 1988.
- Air Force Outreach Program Office. “*Small Business Pocket Guide*.” 2004.
- Arnold, Paul V. “Coke finds MRO is the real thing.” *MRO Today*, accessed on 10 August 2004 at <http://www.mrotoday.com/mro/archives/Cover%20stories/CokeFM2004.htm>. 2004.
- Audretsch, David B. “Standing on the shoulders of midgets: The U.S. Small Innovation Research Program (SBIR).” *Small Business Economics*, Volume 20, Issue 2. March 2003.
- Ausink, John, Laura H. Baldwin, and Christopher Paul. “*Air Force Procurement Workforce Transformation: Lessons From The Commercial Sector*.” Documented briefing based upon research performed by the RAND Corporation, Santa Monica, California, sponsored by the United States Air Force under contract F49642-01-C-0003. 2004.
- Avery, Susan. “Brunswick Saves Big Bucks.” *Purchasing Magazine*. 1999.
- Bauhof, Ned. “SCOR Model: Supply Chain Operations Reference Model.” *Beverage Industry*. 2004.
- Bazinet, Belinda. “*Air Force Commodity Council saves money for major commands*.” United States Air Force, Headquarters Standard Systems Group, Maxwell AFB, AL. News Release. 5 December 2003.
- Beasley, Gary and Joseph Cook. “The ‘What,’ ‘Why,’ and ‘How’ of Benchmarking.” *Agency Sales*, Volume 25, Issue 6, Page 52. June 1995.

- Billington, Corey and Jason Amaral. "Investing in Product Design to Maximize Profitability Through Postponement." *Ascet*, Volume 1. Montgomery Research. 15 April 1999.
- Birch, D. "The Job Creation Process." *Final Report to Economic Development Administration*. Cambridge, MA: MIT Program on Neighborhood and Regional Change. 1979.
- Bowman, Dan E; Chief, Procurement Transformation; Deputy Assistant Secretary (Contracting); Assistant Secretary (Acquisition). "*Commodity Councils – Shaping Small Business Strategies*." AFSB Training and Education Conference. 23 February 2004.
- Briedenhann, Jenny and Eugenia Wickens. *Combining Qualitative and Quantitative Research Methods in Evaluation Related Rural Tourism Development Research*. Buckinghamshire Chilterns University College, Wellesbourne Campus, High Wycombe HP13-5BB, United Kingdom. Date Unknown.
- Camp, R.C. "Benchmarking: The Search For Best Practices That Lead To Superior Performance." Parts I – IV. *Quality Progress*. 1989.
- CAPS Research. "*Report of Cross-Industry Standard Benchmarks*." April 2004.
- Carbone, James. "Reinventing purchasing wins the medal for Big Blue." *Purchasing Magazine*, Volume 127, Issue 4, Page 38. 16 September 1999.
- Carr, Amelia S. and Larry R. Smeltzer. "The Relationship Among Purchasing Benchmarking, Strategic Purchasing, Firm Performance, and Firm Size." *Journal of Supply Chain Management*, Volume 35, Issue 4, Page 51. Fall 1999.
- Carter, Joseph R. and Ram Narasimhan. "Is Purchasing Really Strategic?" *International Journal of Purchasing and Materials Management*. January 1996.
- Carter, Phillip, Stewart Beall, Christian Rossetti, and Eric Leduc. "*Critical Issues Report*." CAPS Research. September 2003.
- Carter, Theresa C. "*Supplier Relationship Management: Models, Considerations, and Implications for DOD*." Strategic Supply Industry Study Course, AY 2002-2003. The Industrial College of the Armed Forces, National Defense University, Fort McNair, Washington, DC. 2002.
- "CASE STUDY: Air Force Materiel Command Hikes Availability." *Purchasing Magazine*, Volume 133, Issue 9, Page 47. 20 May 2004.

- Chao, Chiang-Nan, Eberhard E. Scheuing, and William A. Ruch. "Purchasing Performance Evaluation: An Investigation of Different Perspectives." *International Journal of Purchasing and Materials Management*. National Association of Purchasing Management, Inc. 1993.
- Chapman, Timothy L., Jack Dempsey, Glenn Ramsdell, and Michael R. Reopel. "Purchasing and Supply Management: No Time for 'Lone Rangers'." *Supply Chain Management Review*. Winter, 1998.
- CHI Research, Inc. *Small Serial Innovators: The Small Firm Contribution to Technical Change*. Prepared for the Small Business Administration Office of Advocacy under contract number SBAHQ-01-C-0149. Washington: GAO, February 27, 2003.
- Christensen, David S., David A. Searle (Capt), and Caisse Vickery. "The Impact of the Packard Commission's Recommendations on Reducing Cost Overruns on Defense Acquisition Contracts." *Acquisition Review Quarterly*. Summer 1999.
- Clark III, Major and Chad Moutray. "The Future of Small Business in the U.S. Federal Government Marketplace." *Journal of Public Procurement*. 2004.
- Clare, Michael. "Working With Our Publics." Module 7, Broome: Cornell University. 1997.
- Colgate, Mark. "Creating Sustainable Competitive Advantage Through Marketing Information System Technology: A Triangulation Methodology Within The Banking Industry." *The International Journal of Bank Marketing*, Volume 16, Issue 2. 1998.
- Cunningham, Lawrence, Clifford Young, and Moonkyu Lee. "Methodological Triangulation In Measuring Public Transportation Service Quality." *Transportation Journal*. 2000.
- Davenport, Thomas, and James E. Short. "The New Industrial Engineering: Information Technology and Business Process Redesign." *Sloan Management Review*. 1990.
- Davies, Brian. "The Role of Quantitative and Qualitative Research In Industrial Studies Of Tourism." *International Journal of Tourism Research*. 2003.
- Defense Acquisition University (DAU). "*Defense Acquisition Guidebook*." Accessed on 20 December 2004 at <http://akss.dau.mil/dag/welcome.asp>. 2004.
- Defense Logistics Agency (DLA). "*Strategic Plan – 2003 Revision*." Obtained from <http://www.dla.mil>. December 2003.

- Denes, Thomas A. "Do Small Business Set-Asides Increase the Cost of Government Contracting?" *Public Administration Review*. September/October 1997.
- Denzin, Norman K. *The Research Act: A Theoretical Introduction to Sociological Methods*. Aldine Publishing Company: Chicago. 1970.
- Defense Federal Acquisition Regulation Supplement (DFARS). *Consolidation of Contracts Requirements*. Change Notice 20040917. Federal Register: 2004.
- Department of the Air Force. *Air Force Federal Acquisition Regulation Supplement (AFFARS)*. AFFARS IG5307.104-93. 2004.
- Department of the Air Force. *Air Force Personnel Survey Program*. AFI 36-2601.
- Department of the Air Force, Air Force Contracting. "Air Force Contracting: Procurement Transformation," accessed on 17 June 2004 at <http://www.safaq.hq.af.mil/contracting/transformation/ccprocess.html>. 2004.
- Department of the Air Force, Air Force Materiel Command. "AFFARS IG5307.104.93 – Informational Guidance – Commodity Council Implementation and Operations," accessed on 19 November 2004 at http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/af_afmc/affars/IG5307.104-93.htm. 2004.
- Dickson, Bob. "Buy Lines: Spend Management Gains Traction In Government Market." Accessed on 14 January 2005 at http://www.washingtontechnology.com/news/18_18/buy_lines-dickson/22349-1.html. Washington Technology. 2003.
- Dobler, Donald W., Lamar Lee, Jr., and David N. Burt. *Purchasing and Materials Management: Text and Cases*. McGraw-Hill, New York. 1984.
- Duffy, Roberta. CAPS Research. "Critical Issues Report: Supply Base Rationalization." Accessed at <http://www.capsresearch.org/publications/pdfs-protected/cir012005.pdf>. 2005.
- Ellram, Lisa M. and Amelia Carr. "Strategic Purchasing: A History and Review Of The Literature." *International Journal of Purchasing and Materials Management*. 1994.
- Ellram, Lisa M., George A. Zsidisin, Sue Perrott Siferd, and Michael J. Stanly. "The Impact of Purchasing and Supply Management Activities on Corporate Success." *The Journal of Supply Chain Management*. Winter 2002.
- Ellram, Lisa M. "A Managerial Guideline for the Development and Implementation of Purchasing Partnerships." *International Journal of Purchasing and Materials Management*. 1991.

Federal Acquisition Institute. “*The Federal Acquisition Process*,” accessed on 9 August 2004 at <http://www.fai.gov/pubres/pubs.htm>. 1999.

Fink, Arlene and Jacqueline Kosecoff. “*The Survey Research Handbook - How to Conduct Surveys: A Step-by-Step Guide*.” Beverley Hills: Sage. 1983.

Fong, Sik Wah, Eddie W.L. Cheng, and Danny C.K. Ho. “Benchmarking: A General Reading for Management Practitioners. *Management Decision*. Greenwood Press, Westport. 1998.

Fowles, J. “*Handbook of Futures Research*.” Greenwood Press, Westport. 1978.

Gaylord, Thomas (Lt Col). “*ITCC Lessons Learned*.” Brief Given to FPCC. 4 March 2004.

General Accounting Office (GAO). “*BEST PRACTICES – Improved Knowledge of DOD Service Contracts Could Reveal Significant Savings*.” Report to the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate. Washington DC: GPO. June 2003.

General Accounting Office (GAO). “*Small Business: Limited Information Available on Contract Bundling’s Extent and Effects*.” Report GAO/GGD-00-82. Washington DC: GPO. March 2000.

General Accounting Office (GAO), Program Evaluation and Methodology Division. “*Case Study Evaluations*.” GAO/PEMD-91-10.1.9. Washington DC: GPO. 1990.

Gordon, T.J. “The Methods of Futures Research.” *Annals of the American Academy of Political and Social Science*. July 1992.

Gottlieb, Daniel W. “Military Declares War On Spend.” *Purchasing Magazine*, Volume 133, Issue 9, Page 44. 20 May 2004.

Graham, John. Class handout, BA 351, Corporate Finance. Fuqua School of Business, Duke University. 2003.

Hacker, Kenneth L., Blaine Goss, Charles Townley, and Valerie J. Horton. “Employee Attitudes Regarding Electronic Mail Policies: A Case Study.” *Management Communication Quarterly*. 1998.

- Hamner, Kenneth L. and Charles A. La Fleur. “*An Exploratory Survey of Methods Used To Develop Measures of Performance.*” MS Thesis. AFIT/GSM/LAS/93S-6. School of Logistics and Acquisition Management, Air Force Institute of Technology (AU), Wright-Patterson AFB, OH. September 1993.
- Handfield, Robert B., Daniel R. Krause, Thomas V. Scannell, and Robert M. Monczka. “Avoid the Pitfalls in Supplier Development.” *Sloan Management Review*: Massachusetts Institute of Technology. Winter 2000.
- Heitkamp, Kenneth B. “USAF Information Technology Commodity Council.” Report given to the Office of the Secretary of Defense, Acquisitions. Accessed at http://www.acq.osd.mil/dpap/about/Procurement2004/presentations/03K_HeitkampSlides.pdf. 2004.
- Hoepfl, Marie C. “Choosing Qualitative Research: A Primer for Technology Education Researchers.” *Journal of Technology Education*. 1997.
- Hurley, Ann M. “*IT Commodity Council (ITCC) Fact Sheet.*” Air Force Business Modernization Systems Integration. Prepared for November 2003 Corona. 27 October 2003.
- “*IBM Procurement Discussion – Procurement’s Transformation Story.*” Briefing Given by IBM Global Procurement. 2004a.
- “*IBM Procurement Discussion – Sourcing Strategy.*” Briefing Given by IBM Global Procurement. 2004b.
- Kotter, John P. “*Leading Change.*” Harvard Business School Press. Boston, Massachusetts. 1996.
- Krause, Daniel R. and Robert B. Handfield. “Developing A World-Class Supply Base.” *CAPS Research*. 1999.
- “Landing Gear Commodity Council.” Paper written by OO-ALC/LGHL at Hill AFB. Accessed at <http://www.hill.af.mil/lg2/LandingGear/index.htm>. 2004.
- Lang, T. “*An Overview of Four Futures Methodologies,*” accessed on 20 July 2004 at <http://www.futures.hawaii.edu/j7/lang.html>.
- Lee, K.T. and K.B. Chuah. “A SUPER Methodology for Business Process Improvement: An Industrial Case Study in Hong Kong, China.” *International Journal of Operations & Production Management*.” 2001.
- Leedy, Paul D. and Jeanne Ellis Ormrod. “*Practical Research: Planning and Design.*” Merrill Prentice Hall: New Jersey. 2001.

- Leenders, Michiel R., Harold E. Fearon, Anna E. Flynn, and P. Fraser Johnson. *"Purchasing and Supply Management."* McGraw-Hill Irwin: Boston. 2002.
- Leonard, Marcia. *"Air Force Materiel Command: A Survey of Performance Measures."* MS Thesis. Department of the Air Force, Air University, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio (AFIT/GLM/ENS/04-10). March 2004.
- Luo, Wenhong, and Y. Alex Tung. "A Framework for Selecting Business Process Modeling Methods." *Industrial Management + Data Systems.* Wemby. 1999.
- Maanen, John Van (Ed). *"Qualitative Methodology."* Sage Publications: London. 1983.
- Martino, J.P. *Technological Forecasting for Decision Making.* New York, McGraw-Hill. 1998.
- Mazzarol, T. *"Do Formal Business Plans Really Matter? A Survey of Small Business Owners in Australia."* Presentation given at the ICSB World Conference, Brisbane, Australia. June 2000.
- McGinnis, Michael A. and Refeekh Mele Vallopra. "Purchasing and Supplier Involvement in Process Improvement: A Source of Competitive Advantage." *The Journal of Supply Chain Management.* 1999.
- Miles, Matthew B. and A. Michael Huberman. *"Qualitative Data Analysis: A Sourcebook of New Methods."* Sage Publications: London. 1984.
- Minihan, Tim. "At IBM, Quality Means New Attention to Detail." *Purchasing Magazine.* 1996.
- Minihan, Tim. "Is this the future of purchasing?" *Purchasing Magazine*, Volume 124, Issue 3, Page 42. 12 March 1998.
- Mogee, Mary Ellen. *Foreign Patenting Behavior of Small and Large Firms: An Update.* Prepared for the Small Business Administration Office of Advocacy under contract number SBAHQ-01-M-0357. Washington: GAO, April 2003.
- Monczka, Robert, Robert Trent, and Robert Handfield. *"Purchasing and Supply Chain Management."* South-Western Publishing, Thomson Learning. 2002.

- Moore, Nancy Y., Laura H. Baldwin, Frank Camm, and Cynthia R. Cook. *"Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms."* Documented briefing based upon research performed by the RAND Corporation, Santa Monica, California, sponsored by the United States Air Force under contract F49642-01-C-0003. 2002.
- Moore, Nancy Y., Cynthia Cook, Charles Lindeblatt, Athar Osama. *"Using a Spend Analysis to Help Identify Prospective Air Force Purchasing and Supply Initiatives: Summary of Selected Findings."* Documented briefing based upon research performed by the RAND Corporation, Santa Monica, California, sponsored by the United States Air Force under contract F49642-01-C-0003. 2004.
- Morgan, Jim. "R. Gene Richter: The man who made supply strategies work." *Purchasing Magazine*, Volume 132, Issue 17, Page 45. 6 November 2003.
- Nagle, J. F. *"Federal Procurement Regulations: Policy, Practice, and Procedures."* The American Bar Association. 1987.
- National Academy of Engineering. *Risk & Innovation: The Role and Importance of Small High-Tech Companies in the U.S. Economy.* Prepared by the Committee on Technology, Management, and Capital in Small, High-Tech Companies. Washington: National Academy Press, 1995.
- National Federation of Independent Business (NFIB). *NFIB Small Business Policy Guide.* Accessed at <http://prod.ion.nfib.com> on 20 Dec 2004. 2003.
- National Institute of Governmental Purchasing, Inc. *"Advanced Public Procurement."* Fifth edition. 1999.
- Nguyen, Sang V., and Seong-Hoon Lee. "Returns to Scale in Small and Large U.S. Manufacturing Establishments: Further Evidence." *Small Business Economics.* 2002.
- O'Brien, Erin and Capt Kurt Ettrich. *"Leveraging AFMS Buying Power."* Briefing given to the AFMS Commodity Council. 5 August 2004.
- Office of Management and Budget (OMB), Office of Federal Procurement Policy. *"Contract Bundling: A Strategy For Increasing Federal Contracting Opportunities For Small Business."* October 2002.
- Office of the Secretary of Defense (OSD). *"Defense Budget Materials FY 2004 Budget,"* accessed on 20 August 2004 at http://www.dod.mil/comptroller/defbudget/fy2004/fy2004_summary_tables_part1.pdf. 2004.

- Ojo, Bolaji. "Motorola's Master Plumber – Theresa Metty was instrumental in reinvigorating Motorola's cell phone business, and in the process helped developed procurement practices that the rest of the company is now adopting." *EBN*. Manhasset. 31 March 2003.
- Penska, Kenneth and Khi V. Thai. "Regulation vs. Self-Governed Compliance In Government Procurement: The Perceived Impact Of DII." *Journal of Public Budgeting, Accounting & Financial Management*. Fall 2000. ABI/INFORM Global.
- Petrick, Joseph, Robert Scherer, Frederick Westfall, and Janice Crabtree Wilson. "Benchmarking and Improving Core Competencies." *The Journal for Quality and Participation*. 1994.
- Pike, William C. "Measuring Small Participation in Air Force Contracting: The Impact Of Acquisition Reform." MS Thesis. Department of the Air Force, Air University, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio (AFIT/GAQ/ENV/04M-10). 10 March 2004.
- Porter, Anne Miller. "Firms Give Purchasing More Central Control." *Purchasing Magazine*. 15 July 1999.
- Porter, Anne Miller. "CEO report: Spend a little, save a lot!" *Purchasing Magazine*, Volume 131, Issue 6, Page 23. 4 April 2002a.
- Porter, Anne Miller. "Purchasing Survey: Buyers' cost reduction goals average 12% in '02 (extended version)." *Purchasing Magazine*. 9 October 2002b.
- Porter, Anne Miller. "Containing Total Spend." *Purchasing*. 2003.
- Porter, Anne Miller, James Carbone, Susan Avery, and David Hannon. "Super Spend Analysis." *Purchasing Magazine*. 18 March 2004.
- Reese, Maj David and Capt Mark Hansen. "Commodity Council: Concept of Operations." Released from SAF/AQCA. 21 Jan 2003. (Reese, 2003, pg#)
- Rossi, Peter, James D. Wright, and Andy B. Anderson. "Handbook of Survey Research." New York: Academic Press. 1983.
- Sackman, S.A. "Cultures and Subcultures: An Analysis of Organizational Knowledge." *Administrative Science Quarterly*, Page 140. 1992.
- Sarkis, Joseph, and Srinivas Talluri. "A Model For Strategic Supplier Selection." *Journal of Supply Chain Management*. Volume 38, Issue 1. 2002.

- Scandura, Terri A. and Ethlyn A. Williams. "Research Methodology In Management: Current Practices, Trends, and Implications For Future Research." *Academy of Management Journal*. 2000.
- Schiemann, William. "Why Change Fails." *Across the Board*, Page 53. 1992.
- Senge, Peter, Art Kleiner, Charlotte Roberts, Richard Ross, George Roth, and Bryan Smith. "*The Dance of Change: The Challenge of Sustaining Momentum in Learning Organizations*." Doubleday, New York. 1990
- Simpson, Penny M., Judy A. Siguaw, and Susan C. White. "Measuring the Performance of Suppliers: An Analysis of Evaluation Processes." *The Journal of Supply Chain Management: A Global Review of Purchasing and Supply*. 2002.
- Small Business Administration (SBA), Office of Advocacy.
 "Frequently Asked Questions: Advocacy Small Business Statistics and Research."
 Accessed on 20 September 2004 at <http://app1.sba.gov/faqs/faqIndexAll.cfm?areaid=24>. 2004.
- Small Business Administration (SBA), Office of Advocacy. "*Small Business Share of Private, Non-Farm Gross Domestic Product*." Contract SBAHQ-95-C-0021. United States Government Printing Office, Washington. 1997.
- Small Business Administration (SBA), Office of Advocacy. "*The Small Business Economy: A Report To The President*." United States Government Printing Office, Washington. 2004.
- Smock, Douglas A. "Best Practices at Big Blue Three Years Later." *Purchasing Magazine*. 21 Feb 2002.
- Spendolini, M.J. "*The Benchmarking Book*." AMACOM, New York. 1992.
- Stephens, Scott. "Supply Chain Operations Reference Model Version 5.0: A New Tool to Improve Supply Chain Efficiency and Achieve Best Practices." *Information Systems Frontiers*. 2001.
- Strauss, Anselm and Juliet Corbin. "*Basics Of Qualitative Research: Grounded Theory Procedures and Techniques*." Sage Publications: London. 1990.
- Supply-Chain Council (SCC). "*Supply-Chain Operations Reference-Model*." Accessed on 5 October 2004 at www.supply-chain.org. 2002.

- Supply-Chain Council (SCC). “*The Phios Process Repository: SCOR Model 5.0.*” Accessed on 10 January 2005 at <http://repository.phios.com/SCOR/Activity.asp?ID=5316>. 2005.
- Targett, D. “*Analytical Decision Making.*” London: Pitman Publishing. 1996.
- Thai, Khi V. “Public Procurement Re-Examined.” *Journal of Public Procurement*, Volume 1, Issue 1, 9-50. PrAcademics Press, 2001.
- The Best Manufacturing Practices (BMP) Program.* Accessed 10 September 2004 at <http://www.bmpcoe.org/>.
- The Folio.* “The Tools Used In Modeling The Business.” Institute of Financial Consultants’ Magazine, Issue 12. 2003.
- The Hackett Group. “*Procurement: Current Benchmark Findings.*” Accessed on 10 Jan at <http://www.thehackettgroup.com>. 2004.
- The Office of Advocacy of the Small Business Administration. “*The Small Business Economy: A Report to the President.*” United States Government Printing Office, Washington. 2004.
- Teets, Peter B., Under Secretary of the Air Force. Address to San Destin Small Business Conference. Air Force Outreach Program Office, San Antonio. 2005.
- Trent, Robert J. and Robert M. Monczka. “Purchasing and Supply Management Trends and Changes Throughout the 1990’s.” *International Journal of Purchasing and Materials Management*, Page 3. Fall 1998
- Trent, Robert J. and Robert M. Monczka. “Effective Cross-Functional Sourcing Teams: Critical Success Factors.” *International Journal of Purchasing and Materials Management*. 1994.
- Trimble, Dave, Jeff Hiatt, and Linda Hope. “*Best Practices in Business Process Reengineering and Process Design: ProSci’s 1997 Benchmarking Study.*” ProSci. 1997.
- United States Air Force, HQ Standard Systems Group. “*Communication Plan for the Air Force IT Commodity Council Desktop/Laptop/Server Replacement Strategy.*” IT Commodity Council. 23 December 2003.
- United States Bureau of Economic Activity. *Survey of Current Business*. Volume 79. 1999.

- United States Congress. *Small Business Federal Contractor Safeguard Act of 2003*. S.633. 108th Congress, 1st Session. Washington: GPO, 2003.
- United States Congress. *Small Business Reauthorization Act of 1997 (SBRA)*. Public Law 105-135. 105th Congress. Washington: GPO, 1997.
- United States Federal Acquisition Regulation (FAR)*. Accessed at <http://www.acqnet.gov/far/>. 2004.
- United States Navy. Accessed 6 March 2005 at www.acq-ref.navy.mil/tools/turbo/topics/cp.html. 2005.
- Value Based Management. “*The Deming Cycle*.” Accessed at http://www.valuebasedmanagement.net/methods_demingcycle.html. 2005.
- Watson, G.H. “*Strategic Benchmarking: How To Rate Your Company’s Performance Against The World’s Best*.” John Wiley & Sons, Inc. 1993.
- Watson, G.H. “*The Benchmarking Workbook: Adapting Best Practices for Performance Improvement*.” Productivity Press, Cambridge, Massachusetts. 1992.
- Wang, Ge, Samuel H. Huang, and John P. Dismukes. “Product-Driven Supply Chain Selection Using Integrated Multi-Criteria Decision-Making Methodology.” *International Journal of Production Economics*. 2004
- Weisberg, Herbert F. and Bruce D. Bowen. “*An Introduction to Survey Research and Data Analysis*.” W. H. Freeman and Company, San Francisco. 1977.
- Yin, Robert K. “*Case Study Research: Design and Methods*.” Sage Publications: California, 3rd Edition. 2003.
- Zocco, Dennis P. “A Quality Grid Approach to Evaluating Service Contract Performance.” *Review of Business*. 1993.

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14. ABSTRACT The purpose of this research was to compare industry and Air Force commodity council processes. More specifically, this research used a survey to gather strategic sourcing philosophies and procedures (with respect to small business participation in procurement strategies) from successful industry firms. Industry source selection documentation, applicable government contracting guidelines, and a literature review of strategic sourcing materials were also reviewed. The current Air Force commodity council process and associated historical documents were then studied using a business process modeling tool. It was determined that the Air Force process differs from industry in how small business participation is addressed, the level of detail provided in their source selection guidance, and the manner in which industry business practices are utilized. A modified Air Force commodity council process model and associated commodity council implementation and operations guide (IG5307.104-93) was proposed.					
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